

# The Mining Journal

## RAILWAY AND COMMERCIAL GAZETTE.

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

No. 769.—Vol. XX.]

LONDON, SATURDAY, MAY 18, 1850.

[PRICE 6D.]

### Greenwich Hospital—Sale of Lead Ore.

**THE COMMISSIONERS OF GREENWICH HOSPITAL** will receive TENDERS for the PURCHASE of THREE HUNDRED and EIGHTY BINGS of LEAD ORE, at the Low Byer Inn, ALSTON, up to One o'clock in the afternoon of Friday, the 31st day of May, 1850.

Samples of the ore will be forwarded to any parties wishing to purchase, who may not appoint agents to examine them, on application to Mr. Paul, Alston, Cumberland; and conditions of sale may be had on application to Mr. Grey, at the Greenwich Hospital Office, Dilston, Newcastle-on-Tyne.

### RHUABON, DENBIGHSHIRE.

#### EXTENSIVE SALE OF IRON-WORK, BUILDINGS, AND MACHINERY.

**MR. HILL will SELL, BY AUCTION,** on Monday and Tuesday, the 20th and 21st days of May, 1850, all the BUILDINGS, ENGINES, BOILERS, WEIGHING MACHINES, WATER REGULATOR, BLAST-PIPES, HOT-AIR APPARATUS, quantity of curved pipes for ditto, long lift of pump trees, working barrels, &c., railroads, cast-iron cylinders, stock of cast-iron rails, sleepers, floor-plates, pit-pulleys, carriages, and other useful castings, wrought-iron, smiths', &c., tools, pit frames, gins, flat-ropes, gin and capstan, ropes, coal waggons, pychies, &c., at the POKNEY IRON-WORKS and COLLIERY, near RHUABON, Denbighshire.

The sale to commence each morning at Eleven o'clock.

Mr. Leigh Williams will be in attendance at the Ponkey Iron-Works three days previous, to show the lots.

### MONMOUTHSHIRE.—SALE OF A VALUABLE IRON FOUNDRY AND PREMISES.

**MR. H. M. PARTRIDGE is instructed to SELL, BY PUBLIC AUCTION,** at the King's Head Inn, Newport, on Wednesday, the 22nd day of May next, at One for Two o'clock precisely, all that valuable PROPERTY known as the MAES-Y-CWMWN IRON FOUNDRY.

Situate in the parish of MOU-YTHUS-LWYN, together with TWO good DWELLING-HOUSES and ENTRANCE LODGE.

The FOUNDRY is REPLET with EVERY CONVENIENCE, and comprises stove, engine-house, a single power STEAM-ENGINE, with gearing, &c., to work a blowing-fan, boiler, grate, bars, steam and water-pipes, cupola furnace, with connecting air-pipes, from the fan.

A branch tramroad connects the foundry with the line of tramroad to Newport, Rhymney, Tredegar, &c., from whence iron, coal, and coke may be obtained; there is a fine spring of water on the premises, and a small rivulet running through them.

This property, which comprises two acres, is held under a lease for 30 years, from the 24th June, 1840, subject to an annual ground-rent of £11, and offers a most desirable investment to any person conversant with the business, which may, at a trifling expense, be very considerably extended, and adapted to fitting-up and other purposes.

For further particulars apply to Mr. Edmund Beckingham, West of England Bank; or to Mr. H. M. Partridge, auctioneer, house and estate agent, Newport, Monmouthshire. St. Woolos House, Stow Hill, April 25, 1850.

**TO BE SOLD, BY AUCTION,** at Garraway's Coffee-house, LONDON, on Wednesday next, the 22nd inst., at Three o'clock afternoon, about EIGHTY TONS WHITE, or BELL, METAL, of superior quality.—Samples may be seen or the bulk, which is in London, inspected, on application to Messrs. Cotton and Truman, sworn brokers, Royal Exchange Buildings, London.

**MINE AND MATERIALS FOR SALE.—TO BE SOLD, BY PUBLIC AUCTION,** on Tuesday, the 28th inst., at Twelve o'clock in the forenoon, unless previously disposed of by private contract (of which due notice will be given), all that valuable MINE of BOSGUNDLE, near ST. AUSTELL, CORNWALL; and also NINETEEN (19) FAULTS of the WHEEL TRISTAKA SET, adjoining the Bosgundle Mine, and now in full operation, as a part of the Charlestown United Mines, and yields regular monthly returns of tin, with occasional bunches of rich grey copper ore.—The sets of both mines are held under leases from Colonel Caryon.

The MATERIALS on the BOSGUNDLE MINE consist of a STEAM-ENGINE, of 32 inches cylinder, 9 feet stroke in the cylinder, and 7 feet in the shaft, with two boilers, of about 10 tons each; an excellent WATER-WHEEL, of 40 feet diameter, 4-foot stroke in the cylinder, with boiler, gear, &c., complete; 1 water-wheel, 28-feet diameter and 7-feet breast, with cast-iron axle, cranks, &c., complete; and ditto, 104-feet by 4-feet breast.

On the following day, Wednesday, the 29th inst., at Twelve o'clock in the forenoon, the undermentioned SPARE MATERIALS, the property of the CHARLESTOWN MINES Adventurers, lying on the Bosgundle Common, or Buckler's Mine, will be OFFERED FOR SALE, BY PUBLIC AUCTION—viz.:

**STEAM-ENGINES, &c.**—1 steam pumping engine, 50-inch cylinder (single), 9-feet stroke in the cylinder, and 8-feet in the shaft, with about 10 tons of boiler; 1 steam-engine (drawing machine), 26-inch cylinder, 8-feet stroke in the cylinder, with 7 tons of boiler, gear, &c., complete; 1 other ditto ditto, 22-inch diameter, 4-foot stroke in the cylinder, with boiler, gear, &c., complete; 1 water-wheel, 28-feet diameter and 7-feet breast, with cast-iron axle, cranks, &c., complete; and ditto, 104-feet by 4-feet breast.

**PITWORK.**—9 9-feet 12-inch, 15 9-feet 11-inch pumps; 1 2-feet 6-inch by 12-inch, 1 4-feet 6-inch by 10-inch, and 1 6-feet by 9-inch doorpieces; 2 10-feet 10-inch, 1 9-feet 10-inch, 1 9-feet 8-inch, and 1 9-feet 7-inch working-pieces; 1 6-feet 14-inch, 1 4-feet 11-inch, and 1 4-feet 11-inch windowbores; 1 10-inch and 1 9-inch stuffing box and gland; 1 10-feet 11-inch, 1 9-feet 11-inch, 1 9-feet 10-inch, and 1 8-feet 7-inch plunger-pole, with sundry matching-pieces, &c., various lengths and sizes.

3 Cast-iron stamp axles, to carry 6-heads each; 4 wood ditto, to carry 12-heads each, with tappets and sundry stamp frames.

3 Boiler stands, a quantity of flat-ropes and other pulleys, &c.

Wood and other rolls, 4 capstan pulleys, sundry gudgeons and sockets for V-bobs, planer and top-bobs, two-gudgeons and nose-plates, crown wheel, 6-ft. diameter.

A quantity of tram-iron, and saddles of various sizes, iron waggons, iron kibbles, chain, &c., a boring machine, together with a large quantity of wrought-iron work, consisting of rod-plates, staples, and glands, and other useful articles for mining purposes.

For viewing the mines and materials, application to be made to Capt. Barratt, at the Charlestown Mines; and further particulars to Messrs. John Taylor and Son, 6, Queen-street-place, London; Mr. J. Matthews, Tavistock; or to Capt. Barratt, St. Austell.

### EXTENSIVE AND UNRESERVED SALE OF MACHINERY AND RAILWAY PLANT, AT BERWICK-ON-TWEED.

**MR. EMBLETON will SELL, BY PUBLIC AUCTION,** without reserve, on Monday, the 3d day of June next, and the following day (sale to commence each day at Eleven a.m., and finish at Six p.m.), in the Yard adjoining the New Bridge, the whole STOCK of

### MACHINERY AND RAILWAY PLANT,

which has been used in the erection of the Tweed Viaduct and adjoining contracts, consisting of—4 LOCOMOTIVE ENGINES, with tenders.

2 50-horse power HIGH-PRESSURE BEAM ENGINES.

1 6-horse power ditto PORTABLE ENGINE.

1 12-horse power ditto, with sawing machinery.

3-horse power ditto.

Also, 1 of Nasmyth's PATENT PILE-DRIVING MACHINES, all of which are in excellent working order, and in many cases as good as new.

There will also be sold 2 sets of QUADRANT PUMPS, and 1 set of powerful CHAIN PUMPS, capable of lifting 30 feet.

1 Brass FORGING PUMP; a large number of travelling cranes, jib cranes, crane chains, winches, setting poles.

3 Ram frames, with hammer for driving piles.

A large number of timber boggies, stone waggons, carts, hand and wheelbarrows.

Blacksmiths', carpenters', and quarrying implements of all descriptions.

There will also be sold a large quantity of HORSE GEAR, and about 300 tons of RAILWAY BARS, 35 and 45 lbs. per yard.

Catalogues, with description of engines, may be seen at Mr. Carristair's office, Berwick; or in the yard, on the day of sale.—Berwick, May 14, 1850.

### FOR SALE, BY TENDER.—LOSTWITHIEL CONSOLS

MINE.—At a General Meeting of the shareholders in the above Mine, held on the 2d inst., it was resolved, that in consequence of the inability of several shareholders to continue their interest in the mine, that the MINE and MATERIALS be advertised FOR SALE, BY TENDER, within three weeks from this time.

Tenders for the same are now solicited. The mine has been worked by the present company nearly four years, and was lately inspected by Mr. A. Murray, Jun., who reported to the adventurers, that to fully develop the mine, by which important results might be obtained, the levels on the east and west side should be extended fully 30 to 40 fathoms, at a cost of £7 per fathom (average), and occupying 6 to 8 months. The engine is a 36-inch interest by 10-foot stroke, and a small additional outlay for pumps would put the mine in an efficient state of working.

Tenders to be addressed to JAMES CROFTS, Secretary, No. 4, King-street, Cheapside, London.

### VALUABLE MINING SETT AND MATERIALS FOR SALE.—TO BE SOLD, BY PRIVATE CONTRACT,

on or before Saturday, the 25th inst., a valuable MINING SETT, called WHEEL SUSAN, situate in the parish of LAMERTON, near TAVISTOCK, and in the neighbourhood of the great Wheal Friendship Mine, together with a considerable quantity of MATERIALS on the mine, a good counting-house, changing-house, smith's shop, &c.

The sett extends about 400 fathoms on the course of the lodes, and about 200 fathoms north and south. The lease was granted for 21 years, from March, 1846, at 1-15th dues. The workings commenced in the early part of 1845; a shaft sunk about 25 fathoms, and two very promising lodes laid open, from one of which about 11 tons of rich copper ore was raised. The operations were discontinued in the latter part of 1846, for reasons which will be explained by Mr. Thomas Weekes, of Ottery, near Tavistock, to whom all applications are to be made.—May 14, 1850.

### TO CONTRACTORS, BUILDERS, AND OTHERS.

**TO BE SOLD, BY PRIVATE CONTRACT, THE ENGINES, MACHINERY, &c.,** which have been used in the erection of the Britannia-bridge, consisting of ONE 40-horse HIGH-PRESSURE ENGINE, with 18-inch cylinder, and 3-foot 6-inch stroke, with boiler complete, drum and hoisting gear; ONE 25-horse HIGH-PRESSURE ENGINE, with 14-inch cylinder, and 3-ft. stroke, with portable boiler complete, drum and hoisting gear; travelling cranes, landing cranes, setting machines, single and double purchase crabs, blocks, chain and tackle of every description, and of first-rate quality.—Application to be made to Messrs. R. J. Nowell and Co., at the works, Britannia-bridge, Bangor, North Wales.

### EAST OF SCOTLAND MALLEABLE IRON COMPANY.

The Directors have been authorized to RECEIVE OFFERS for the PURCHASE, or LEASE, of the MALLEABLE IRON WORKS at DUNFERMLINE—comprising a STEAM-ENGINE, of 80-horse power, working the machinery, consisting of FORGE and 2 PUDDLE BAR TRAINS, of 16 inches diameter, HAMMER and PATENT SHINGLING MACHINE; also a 16-inch MERCHANT BAR or RAIL MILL, a 12-inch MILL for ordinary sized merchant bars, and an 8-inch GUIDE MILL, 13 PUDDLING FURNACES, and 6 MILL FURNACES—the whole capable of producing 120 tons of bar-iron weekly.

A REFINERY STEAM-ENGINE, of 45-horse power, with blowing apparatus, complete, and two fire engines.

A complete SET of WORKSHOPS, containing a 20-horse power STEAM-ENGINE, driving a powerful roll-turning lathe, and blowing apparatus for smiths' fires.

A PUMPING and CLAY MILL STEAM-ENGINE, of 16-horse power, used for the manufacture of fire-brick, and pumping water for supply of engines.

Also, in course of erection, a STEAM-ENGINE, of 80-horse power, intended to drive the mills apart from the forges, having strong cast-iron framing laid down, and machinery suitable for the premises, which could be brought into active operation in a short period.

Together with the necessary TOOLS, LOOSE MACHINERY and STOCKS, of different kinds.

Offers will also be received for the PURCHASE of the ESTATE of TRANSY, consisting of about 107 imperial acres, with elegant MANSION-HOUSE and PLEASURE GROUNDS, situated about half a mile to the east of the town of Dunfermline.

Applications may be made to Mr. James Inglis, Chairman of the Company; or to Johnstone, Russell, and Craig, writers, Dunfermline.

Dunfermline, March 15, 1850.

### UNSTON IRON WORKS, NEAR SHEFFIELD.—

Messrs. RANGLEY, WRIGHT, and Co. invite the attention of IRON MANUFACTURERS, IRON FOUNDRIES, &c., to their DERBYSHIRE PIG-IRON (smelted entirely with coke), which they can with confidence recommend for all purposes where purity of metal, combined with tenacity or strength, is an object. Their No. 3 pig-iron is sufficiently fluid for all descriptions of foundry-work. PIPING made from this quality will admit of almost any amount of hydraulic pressure. As a mixture with tender iron, or for purposes requiring great strength, their No. 4 is particularly adapted. For FOUNDRY PURPOSES, the loss from waste in cinder, &c., is much below the usual average, and the product a very superior iron.

Messrs. R.W. and Co. also beg to inform RAILWAY CONTRACTORS, ENGINEERS, GAS and WATERWORKS COMPANIES, BUILDERS, MILLWRIGHTS, &c., that having purchased an extensive assortment of models and apparatus from Messrs. Wm. Graham and Co., of Milton Iron-works (who have declined business), and having engaged experienced workmen from that establishment, they are in a position to furnish ALL DESCRIPTIONS OF CASTINGS, suitable for the above branches, and at moderate prices.

### TO IRONMASTERS, ENGINEERS, AND OTHERS.

#### CONDIE'S IMPROVED PATENT STEAM HAMMER.—

THE SUBSCRIBER has most respectfully to call the attention of PARTIES interested to his PATENT IMPROVED STEAM HAMMER, which has now been in constant OPERATION at GOVAN IRON-WORKS since February, 1848. This improved and simple machine has been successful beyond the most sanguine expectations of the inventor, and can be kept up with less than the usual wear and tear of an ordinary high-pressure steam-engine, as has been satisfactorily proved by the working of two of these hammers at the above establishment. The subscriber strongly recommends his hammer of 24 tons, with his patent anvil for puddling, forging, and slabbing purposes, which can be wrought so economically, that it will pay its own cost in about 18 months.

The PATENT ANVILS alone last from 5 to 10 times longer than the common ones. The subscriber's professional avocations have so engrossed his attention, that he has been, in a great measure, compelled to neglect his commercial interest in bringing his hammer before the public; but he is now happy to say, that he has arranged with Messrs. JOHN DIXON & CO., PAISLEY, for the sale of his MANUFACTURE; and as those gentlemen have made several of the hammers, they are fully conversant with all the mechanism of the patent.

Any weight of hammer, from 1 cwt. to 5 tons, can be made—alike suitable for the smith's shop, the ironmaster, or the jobbing forge.

For particulars apply to Messrs. John Dixon & Co., engineers, Paisley; or here to JOHN CONDIE, Govan Iron-Works, Glasgow.

N.B.—Parties interested are invited to call at Govan Iron-Works and see those machines, which are in operation day and night.

### TOUGHENED CAST-IRON—STIRLING'S PATENT.

No. 1.—FOR SMALL AND MEDIUM CASTINGS.

No. 2.—FOR HEAVY CASTINGS.

No. 3 (Extra).—FOR ROLLS, HEAVY SHAFTS, AND VERY HEAVY CASTINGS.

The above is by far the strongest Cast-Iron made, and is now being extensively used where strong castings are required.

Further particulars may be obtained on application to Messrs. GARDEN & MACANDREW,

27, Queen-street, Cheapside, from whom also the IRON can be PROCURED.

### STEAM TO INDIA AND CHINA, VIA EGYPT.—Regular

MONTHLY MAIL (steam conveyance) for PASSENGERS and LIGHT GOODS to CRYLON, MADRAS, CALCUTTA, PENANG, SINGAPORE, and HONG-KONG.

THE PENINSULAR AND ORIENTAL STEAM NAVIGATION COMPANY

BOOK PASSENGERS and RECEIVE GOODS and PARCELS for the ABOVE PORTS by their steamers—starting from Southampton on the 20th of every month; and from Suez on or about the 10th of the month.

BOMBAY.—Passengers for Bombay can proceed by this company's steamers of the 29th of the month, to Malta, thence to Alexandria by her Majesty's steamers, and from Suez by the Honourable East India Company's steamers.

MEDITERRANEAN.—MALTA—On the 30th and 29th of every month. CONSTANTINOPLE—On the 29th of the month. ALEXANDRIA—On the 20th of the month.

SPAIN AND PORTUGAL.—Vigo, Oporto, Lisbon, Cadiz, and Gibraltar, on the 7th 17th, and 27th of the month.

For plans of the vessels, rates of passage-money, and to secure passages and ship cargo, apply at the company's offices, No. 122, Leadenhall-street, London; and Oriental-place, Southampton.

### SCHOOL OF MINERALOGY, CHEMISTRY, AND GENERAL SCIENCE.

MESSRS. NESBIT'S ACADEMY,

No. 38, KENNINGTON-LANE, LAMBETH, NEAR LONDON.

In this SCHOOL, in addition to all the branches of a good education, EVERY FACILITY is AFFORDED for obtaining a knowledge of ANALYTICAL CHEMISTRY and NATURAL SCIENCE, as applied to the Arts, Manufactures, and Agriculture.

The pupils are practically taught in the Laboratories, which are fitted up with every essential for the most extensive chemical investigations.

Mr. Nesbit's works on Land Surveying, Mensuration, Gauging, Arithmetic, English Parsing, &c., may be had of all booksellers.

References.—Dr. D. B. Reid, F.R.S.E., &c., House of Commons, Westminster; R. Prosser, Esq., C.E., Birmingham; J. L. Bullock, Esq., Editor of *Pressey's Chemical Analysis*; Conduit-street, Regent-street; J. Gardner, Esq., M.D., Editor of *Liebig's Letters*, &c., Mortimer-street, Portland-place; and W. Shaw, Esq., Strand, London.

### ROYAL POLYTECHNIC INSTITUTION.—COURSE OF

TWENTY LECTURES, of two hours each, on USEFUL PRACTICAL CHEMISTRY, under the direction of J.H. PERKINS, Esq., adapted for Manufacturers, Schoolmasters, and Students. The Course will be a Systematic Series on the Elementary Details and Manipulations of Chemistry, the Atomic Theory and Symbols, Preparation of Gases, Acids, Saline Bodies. Qualitative and Quantitative Analysis.

On commencing on the 27th inst.—Fee, including admission to the Institution during the Course, Two Guineas.

Analyses of Soils and Advice to Farmers at very moderate charges.

### THE SOUTH COAST OF ENGLAND.

This day is published, price 6d.

### THE MEANS OF PRESERVING LIFE AND PROPERTY,

and of PROMOTING EUROPEAN TRADE, by the more general use of SOUTHAMPTON and OTHER PORTS ON THE SOUTH COAST, and the more perfect adaptation of the RAILWAY SYSTEM OF ENGLAND to the PURPOSES OF COMMERCE, DEMONSTRATED.

London: Edinburgh Wilson, Royal Exchange.

### THE MINING ALMANACK for 1850: compiled and arranged

by HENRY ENGLISH, Mining Engineer, &c. Under the special sanction and patronage of H.R.H. PRINCE ALBERT, Lord Warden of the Stannaries, Chief Steward of the Duchy of Cornwall, Devon, &c.—THE SECOND VOLUME will appear early in JUNE NEXT, with ADDITIONAL TABLES and STATISTICS, connected with the Mining Interest.—Names of subscribers are requested to be addressed to Mr. H. English, 25, Fleet-street.

### WANTED, in a MANUFACTURING BUSINESS and

IRON TRADE, A PARTNER, who can command from £5000 to £8000, and who may be actively engaged or otherwise. The business is well established, and in full operation, yielding good profits, and capable of considerable improvements.—Communications, addressed to "A. B.," 25, Basinghall-street, London, will have prompt attention. N.B.—None but principals will be treated with.

### TO FURNACE MANAGERS.—WANTED, at an old established Iron-Works, a PERSON to TAKE CHARGE of THREE BLAST-FURNACES, who is thoroughly acquainted with the adaptation of Cold and Hot Blast, and the regulation of the Heaters and Apparatus; also to SUPERINTEND the COKING and MIXE BURNING, both in kilns and open. He must be able to write well, so as to keep the necessary accounts. A forge and mill, capable of turning out a large make of finished iron per week, are connected with the furnaces, the whole being under a general manager.

Apply by letter, in applicants' writing, to "T. J.," Post-office, Wolverhampton, stating age, qualifications, references, and salary required.—May 16, 1850.

### LONDON AND LIVERPOOL COMMISSION AND

GENERAL AGENCY OFFICES.—Every description of COMMERCIAL BUSINESS CONDUCTED by Messrs. BRADFIELD & CO., No. 19, STRAND, LONDON, and Mr. HILD, ST. GEORGE'S BUILDINGS, BASSETT-STREET, LIVERPOOL.

Patentees, Inventors, and others desirous of giving publicity to New Works, will have their views vigorously worked out by parties acquainted with every detail and channel, metropolitan and provincial.—Agencies arranged, and correspondence, inquiries, collection of debts and rents, undertaken with energy and economy.

### BRITISH AND FOREIGN REGISTRY OFFICE.—

PARTIES having MINERAL ESTATES, COLLIERIES, or MINES, FOR SALE, or SHARES TO DISPOSE OF, in DIVIDEND MINES, or OTHERS, by enclosing a list of the number and price of such shares, and particulars of such property, the same will be REGISTERED FOR SALE, and commission charged only on sales taking place. Money advanced if required.—Apply to Mr. DURRANT, 38, Lombard-street, London.

### CONSULTING SHAREBROKERS.—"FACTS AND FIGURES."

MESSRS. R. B. WATSON & CO., lately of Leeds, and formerly of Hull, have resumed BUSINESS, as CONSULTING SHAREBROKERS, in LONDON. In the former place R. B. W. acted as a sharebroker for 10 years, and in the latter, as a commercial broker, for 10 years.

Having drawn up the last half-yearly accounts of the principal railways, upon one uniform plan, they propose offering to investors, but not to mere speculators, their opinion of railways, founded upon these facts and figures.

For terms, and a circular, apply at No. 39, Old Broad-street.

### MR. JAMES CROFTS, of No. 4, KING-STREET,

CHEAPSIDE, takes the liberty of soliciting the attention of CAPITALISTS (and more particularly so in consequence of the depressed and, in his opinion, still unsafe condition of railway property) to the MINING INTERESTS of GREAT BRITAIN, as offering, at this time, the SAFEST MEDIUM OF INVESTMENT of any adventures of an acknowledged speculative character, and TENDERS his SERVICES generally for the PURCHASE or SALE of MINING SHARES.

Mr. CROFTS has at present FOR SALE SHARES in the following Adventures:—

ASHBURTON UNITED (Tin), in 1024 shares, and a new issue of 1024 shares, on which 21 per share is to be paid out of a maximum new capital of 41 per share.

ESHAH LLEE (Lead), in 1860 shares.—South Wales.

WHEAL BRAY (Copper), in 1024 shares.

BODCAL, or SOUTH WALES (Lead and Copper), in 2000 shares.

WHEAL LANGFORD (rich Silver, Gossan, and Lead), in 6000 shares.

BODWIN CONSOLS (Silver-Lead), in 1024 shares.

LLWYNMALES (Silver-Lead), in 1000 shares.—Cardiganshire.

METROPOLITAN STONE COMPANY, in 100 shares.

WHEAL EMILY (Silver-Lead), in 1024 shares.—Devon.

HAFOD LLWYN (Silver-Lead), in 1000 shares.—North Wales.

WHEAL TRESCOLI (Tin), in 100 shares.

TRIGEAR CONSOLS (Silver-Lead), in 5000 shares.

CWM ERFIN (Lead), in 1000 shares.—South Wales.

In addition to the above, Mr. CROFTS has also generally FOR SALE SHARES in the MINES managed in his OFFICE, where the Cost-books, Lists of Shareholders, and periodical Balance-sheets and Reports may be inspected—viz.:

LAMHEROKE WHEAL MARIA (Copper) in 2048 shares.

WHEAL BENNY (Copper) in 256 "

LOSTWITHIEL CONSOLS (Copper) in 256 "

COMBLAWN (Silver-Lead) in 500 "

WHEAL VINCENT (Tin) in 1000 "

WHEAL SARAH (Silver, Gossan, and Lead) in 1056 "

WANTED TO PURCHASE.—WEST SETON.

Mr. CROFTS is NOT A DEALER in SHARES for his own account, but only for principals.

### MINING PROPERTY.—Mr. HERRON has SHARES in

the best DIVIDEND MINES FOR SALE, and which will give to the purchaser 17 to 25 per cent. for the outlay; amongst others are the following:—Trelawny, Mary Ann, Great Devon Consols, Bodford, South Tawar, Holmbush, Tincroft, Herodasoft, Levant, Great Consols, South Tolgu, West Tolgu, East Buller, Stray Park—St. John del Rey, United Mexico, and Cobri Mines.

Mining Offices, 38, Clement's-lane, Lombard-street.

### MINING INVESTMENT.—Messrs. BOXALL & CO.,

No. 5, CROSBY HALL CHAMBERS, LONDON, are prepared to BUY and SELL in the following MINES:—Hennock Silver-Lead, Penzance Consols, North Roakcar, Bryn-Arian, Wheal Langford, Devon Great Consols, South Plain Wood, Wheal Franco, Wheal Sarah, Wheal Godean, Heigstoun Down Consols, West Providence, Trelawny, Trethellan, Santiago, Llanres, Imperial Brazilian, and Guadacanal.

N.B.—MINES INSPECTED and confidential REPORTS SUPPLIED.

### MR. TRIPP, MINE AGENT, transacts BUSINESS ex-

clusively FOR PRINCIPALS. He is instructed to BUY and SELL in most of the best DIVIDEND-PAYING MINES; also in the NEW ONES, having present and prospective advantages. MINING OFFICES.

ST. MICHAEL'S CHAMBERS, ST. MICHAEL'S ALLEY, CORNHILL, LONDON.

### MR. T. A. READWIN, MINING OFFICES,

2, WINCHESTER-BUILDINGS, OLD BROAD-STREET, LONDON.

### MR. C. S. RICHARDSON, CIVIL ENGINEER, LAND

AND MINING SURVEYOR.

No. 15, OLD



LITERARY NOTICES.

*A Catechism of the Steam-Engine, illustrating the Scientific Principles upon which its Operation depends, and the Practical Details of its Structure, in its Application to Mines, Mills, Steam Navigation, and Railways, with various Suggestions of Improvement.* By JOHN BOURNE, C.E. (third edition). London: Longman, Brown, Green, and Longmans.

In the *Mining Journal* of 13th Jan., 1849, we took a brief review of a work on the *Steam-Engine*, by Mr. Bourne, published by the Artizan Club, which, from the variety of the matter contained, the fullness of details, and the correctness of the general principles laid down, has been highly appreciated in the scientific world. We have now again before us the knowledge and experience of the same talented author, placed in an entirely elementary form, arranged as a catechism in questions and answers; which, while suited to the capacity of the merest tyro, will be found to possess much valuable information for the student of older growth, and will prove a valuable companion to the young mechanical engineer. As a general specimen of the volume, we give the following extract of the process for finishing iron cylinders, one of the most important in practical engineering:—

Will you explain the various stages of the manipulation connected with the preparation of cylinders?—In the first place the cylinder has to be cast. The mould into which the metal is poured is built up of bricks and loam, which is clay and sand ground together in a mill, with the addition of a little horse-dung, to give it a tenuous structure and prevent cracks. The loam board, by which the circle of the cylinder is to be swept, is attached to an upright iron bar, at the distance of the radius of the cylinder, and a cylindrical shell of brick is built up, which is plastered on the inside with loam, and made quite smooth by traversing the perpendicular loam board round it. A core is then formed in a similar manner, but so much smaller as to leave a space between the shell and the core equal to the thickness of the cylinder, and into this space the melted metal is poured. Whatever nozzles or projections are required upon the cylinder must be formed by means of wooden patterns, which are built into the shell, and subsequently withdrawn; but where a number of cylinders of the same kind are required, it is advisable to make these patterns of iron, which will not be liable to warp or twist while the loam is being dried. The general ambition in making cylinders is to make them sound and hard; but it is expedient also to make them tough, so as to approach as nearly as possible to the state of malleable iron. This may be done by mixing in the furnace as many different kinds of iron as possible, and it may be set down as a general rule in iron founding, that the greater the number of the kinds of metal entering into the composition of any casting, the denser and tougher it will be. The constituent atoms of the different kinds of iron appear to be of different sizes, and the mixture of different kinds maintains the toughness, while it adds to the density and cohesive power. Hot-blast iron was at one time generally believed to be weaker than cold-blast iron; but it is now questioned whether it is not the stronger of the two. The cohesive strength of unannealed iron is not in proportion to its specific gravity, and its elasticity and power to resist shocks appears to become greater as the specific gravity becomes less. Nos. 3 and 4 are the strongest irons. In most cases, iron melted in a cupola is not so strong as when melted in an air furnace; and when run into green sand, it is not reckoned so strong as when run into dry sand or loam. The quality of the fuel, and even the state of the weather, exerts an influence on the quality of the iron; smelting furnaces, on the cold-blast principle, have long been known to yield better iron in winter than in summer, probably from the existence of less moisture in the air, and it would probably be found to accomplish an improvement in the quality of the iron if the blast were made to pass through a vessel containing muriate of lime, by which the moisture of the air would be extracted, and the expense of such a preparation would not be considerable, as, by subsequent evaporation, the salt might be used over and over again for the same purpose. Before the iron is cast into the mould, the interior of the mould must be covered with finely powdered charcoal, or blackening, as it is technically termed;—and the secret of making finely skinned castings lies in using plenty of blackening. In loam and sand castings the charcoal should be mixed with thick clay water, and applied until it is dry and cracks; or, if the metal is to be cast in a sand mould, the very carefully smoothed, or sieved, and if the metal has been judiciously mixed, and the mould thoroughly dried, the casting is sure to be a fine one. Dry sand and loam castings should be, as much as possible, made in boxes; the moulds may thereby be more rapidly and more effectually dried, and better castings will be got with a less expense. The next stage is the boring, and in boring cylinders of 74 in. diameter, the boring bar must move so as to make one revolution in about 45 minutes, at which speed the cutters will move at the rate of about 5 ft. per minute. In boring brass the speed is slower; the common rate at which the tool moves in boring brass air-pumps is about 3 feet per minute. If this speed be materially exceeded, the tool will be spoiled, and the pump made taper. The speed proper for boring a cylinder will answer for boring the brass air-pump of the same engine. A brass air pump of 364 in. diameter requires the bar to make one turn in about three minutes, which is also the speed proper for a cylinder 60 in. in diameter. To bore a brass air-pump 364 in. in diameter requires a week, an iron one requires 4 hours, and a copper one 24 hours. In turning a malleable iron shaft 12½ in. in diameter, the lead is about 1/16 in. per inch, the boring bar is about 1/16 in. per inch, and the speed in the tool of about 16 feet per minute. A boring mill, of which the speed may be varied from one turn in six minutes to 25 turns in one minute, will be suitable for all ordinary wants that can occur in practice. Messrs. Penn grind their cylinders after they are bored, by laying them on their side, and rubbing a piece of lead smeared with emery and oil, and with a crossiron handle like that of a rolling stone, backwards and forwards, the cylinder being gradually turned round, so as to subject every part successively to the operation. The lead by which the grinding is accomplished is cast in the cylinder, whereby it is formed of the right curve; but the part of the cylinder in which it is cast should be previously heated by a hot iron, else the metal may be cracked by the sudden heat. In fixing a cylinder into the boring mill, great care must be taken that it is not screwed down unequally, and, indeed, it will be impossible to bore a large cylinder in a horizontal mill without being oval, unless the cylinder be carefully gauged when standing on end, and be set up by screws when laid in the mill, until it again assumes its original form. A large cylinder will inevitably become oval if laid upon its side; and if, while under the tension due to its own weight, it will become irregular in shape, and will set upon end. If the bottom be cast in the cylinder it will probably be found to be round at one end and oval at the other, unless a vertical boring mill be employed, or the precautions here suggested be adopted. Nor is it only in the boring of the cylinder that it is necessary to be careful that there is no change of figure; for it will be impossible to face the valves truly in the case of large cylinders, unless the cylinder be placed on end, or internal props be introduced to prevent the collapse due to the cylinder's weight.

*The Book of North Wales; Scenery, Antiquities, Highways and Byways, Lakes, Streams, and Rivers.* By CHARLES FREDERICK CLIFFE, author of *The Book of South Wales*. With a Map and Illustrations. London: Longman, Brown, Green, and Longmans.

The great opening up of the romantic mountain and valley scenery of Wales, the sylvan retreats, awful precipices, gloomy haunts of superstition, and glassy lakes, which has taken place within the last 20 years, principally by the establishment of the railway system, renders a good handbook for the tourist of considerable interest. Such an one is now before us; and it is fully entitled to as favourable a reception as the author's work on South Wales, to which it will prove a most suitable companion. Great changes have taken place of late years in the numbers of tourists who have penetrated into the principality—a country deeply fraught with interest to the traveller, the antiquarian, and the geologist; many new lights have been thrown on its history and antiquities; and the author has, in this volume, successfully attempted to embody, as far as possible, the marrow of recent investigations. With a love of angling, antiquity, and scenery, he has been led into wild districts, known to few, while the surface of the country, its road scenes, public houses, and great public works, are elaborately described. Two-thirds of the volume have been devoted to Caernarvonshire and Merionethshire, as offering the highest attractions, and being most visited by travellers. There is a glossary of the most usual Welsh terms, by which a traveller may manage to get the necessities of life in the wildest districts; the pronunciation of the Welsh alphabet; an excellently engraved and coloured map, with 13 illustrations. In fact, it is a little work which no tourist in the northern counties of the principality should be without; while it will be found both amusing and instructive to the fireside reader. As a specimen of style, we give a few extracts. In the description of Llyn Idwal, one of the most desolate and solemn spots in Wales, the author remarks:—

It is situated at the bottom of a stupendous *cwm* of Glyder Vawr, at the point where the valley of Llyn Ogwen makes with that of Nant Francon—a great bend, or knee; hence the wind, driving up the latter from the sea-coast, meets an inland current in the *cwm*, and produces violent eddies, which sometimes tear up the waters of the lake in considerable waves. The stream that carries off their overflows approaches Llyn Ogwen from the narrow outlet of Betsi. A fiercer blast for superstitious mind cannot conceive. "Llyn Idwal (says Pennant) is infamous for the murder of a young prince of that name, son of Owen Gwynedd, by Dunaw, one of the fifteen tribes of North Wales, to whom Owen had entrusted the youth, to be fostered, according to the custom of the country. It was a fit place to inspire murderous thoughts, environed by horrible precipices. The shepherds fable that it is the haunt of demons, and that no bird dare fly over its doomed waters, fatal as that of Avernus." A recent tourist has repeated this bird story as a reality, and added that no fish can live in the waters of Llyn Idwal; but we are compelled to regard the legend for small fish, which, however, very uncertain as a story, abounds in it. At this spot you have the sublime without the beautiful—severely, desolation, coldness, gloom. The nearly enclosing sides of the mountain tower precipitously above the lake, exhibiting vast lines of fissure, caused by their slaty nature, and many deep-worn channels, where torrents dash downward. High up on the western side is the great Twll Du, or Devil's Kitchen—a horrible gap in the centre of a great black precipice, extending in length about 150 yards, in depth about 100, and only six wide, perpendicularly open to the face of the mountain. The scene is truly, especially if the stones be slippery in wet weather, is very fatiguing; but the scenery amply repays the labour. You clamber up an immense slide of broken rocks on the shelving mountain side, which seem as if they had been poured like water out of the chasm, and have been aptly termed a river of stones. Similar heaps have been formed by the storms of ages, beneath all the fissures, and encroach upon the narrow shore. If there be much water in the stream that flows out of Twll Du, the difficulty of entering is, of course, greatly increased; even in dry weather the feat requires nerve. Several very rare plants grow in the wet, black, rocky sides of this fissure, and up the "chimney" of the upper end, from which you can see the light above. Ardent botanists sometimes peril their lives here. The view on emerging from the chasm, just within the entrance, is marvellously fine."

In describing Tremadoc, we are taken to some ancient iron-works; the author says:—

An excursion may be made, on the old Caernarvon road, from Tremadoc to Dolben-mann, where was a round tower like that at Dolbadarn, now demolished. There is a vast accumulation of scoria within a few miles of Llyn-faen, above Dolbenmann. The surrounding district is called Gedeilan, or the Smithies, and presents extraordinary evidence of the remains of iron smelting-works, of a magnitude for which history affords no assignable date, whether it be Celtic, Phœnician, or Roman. About two miles south-west of Dolbenmann are three Cromlechs.

In the introduction to Merionethshire it is stated:—

The prevailing geological character of the Merionethshire mountains is nearly the same as that of the Snowdonian group; the greater part of the country is occupied with slate rocks; and in the north-east a blueish-grey limestone, much used for manure, prevails. The minerals chiefly consist of copper and lead, but silver and gold are also found in small quantities near Dolgellau. An excellent sketch of the geology of the county was given by Mr. Joseph Hodgworth, in 1849, in the *Mining Journal*, from which we shall quote in our literary."

We can only conclude this notice by again saying that it is a highly inte-

resting volume, in which all the best routes are carefully laid down, all the principal angling streams and lakes described, with instructions to anglers, and contains every necessary information for the tourist.

Transactions of Scientific Bodies.

MEETINGS DURING THE ENSUING WEEK.

THIS DAY	Westminster Medical—17, Saville-row	8 P.M.
MONDAY	Statistical—12, St. James's-square	3 P.M.
	Chemical—142, Strand	8 P.M.
	Pathological—21, Regent-street, Waterloo-place	8 P.M.
	Medical—3, Bolt-court, Fleet-street	8 P.M.
TUESDAY	Civil Engineers—25, Great George-street	8 P.M.
	Pharmaceutical—17, Bloomsbury-square	11 A.M.
WEDNESDAY	Society of Arts—Adolphus	8 P.M.
	Geological—Somerset House	8 P.M.
	Royal Botanic—Inner Circle, Regent's Park	3 P.M.
THURSDAY	Royal Society of Literature—4, St. Martin's-place	4 P.M.
	Naturalists—41, Tavistock-street, Covent-garden	3 P.M.
FRIDAY	Royal Institution—Albemarle-street	8 P.M.
	Philological—London Library, 13, St. James's-square	8 P.M.

ROYAL INSTITUTION.

On Saturday Dr. Faraday delivered the third lecture of the series upon some points of Domestic and Chemical Philosophy, which was honoured by the presence of Prince Albert. The subject illustrated was the philosophy of "a lamp"—it being the sequel to the one on a candle. In a lamp, as Dr. Faraday observed, the character of the combustion is the same as in a candle, but the fuel is generally liquid to begin with, and is not melted from a solid state and retained in a cup, beautifully excavated by the combined influences of the heat of the flame and the cooling property of the air which rushes to it to support the continued combustion. The bright light of a candle, compared with that of a common lamp, is produced by the more perfect combustion of the melted fuel, in consequence of the wick being better adjusted to the supply of air. The thicker the wick the more dull the flame, because the larger quantity of fuel to be burned requires a greater supply of oxygen from the atmosphere than can be obtained at the surface of the flame, which alone comes in contact with the air in an ordinary lamp. With the view of supplying air to the interior of the flame, Argand made the wick circular, and admitted a current of air to the centre, by which arrangement, assisted by the glass chimney, which causes a greater current to impinge on the surface, the brilliant light of Argand lamps is produced. Though it is essential for the perfect combustion of the carbon of the oil that there should be a sufficient supply of air, yet, if air be introduced in too large a quantity, its cooling influence has an opposite effect, and the hydrogen gas is burned without even the formation of smoke, as witnessed in the action of a blowpipe. The heat of the hydrogen flame remains the same when the carbon is not consumed, and a method has been adopted, and is extensively practised in the arts, of directing a blast of air through a jet of gas, by which means a large and powerful blowpipe is formed, that is used for annealing and soldering silver and other metals in the process of manufacture. Dr. Faraday exhibited the power of such a blowpipe by heating red-hot a silver vase, which was in an unfinished state. He said it must be borne in mind that the light of flame depends on the burning or the incandescence of particles of solid matter, and to promote the combustion of the particles of solid carbon liberated from the oil, is the object of all lamp arrangements. The quantity of carbon present in a flame at any one time is, however, exceeding small, and does not amount to so much as is collected on a glass by holding it momentarily over the flame. The combustion of the carbon is more perfectly accomplished by the aid of pure oxygen gas, the effect of which in increasing the brilliancy of flame was exhibited. It was by this plan that Mr. Goldsworthy Gurney lighted the House of Commons with what was termed the Bude light. Dr. Faraday also exhibited the more brilliant appearance of the Drummond light, which is produced by the incandescence of lime exposed to the greater heat of a combined jet of oxygen and hydrogen gases. The admirable arrangements in light-houses for collecting light and throwing it to great distances horizontally, so that its power may not be dispensed unnecessarily, were much praised by Dr. Faraday, who exhibited several kinds of lights fitted with reflectors and with lenses, by means of which a light may be seen at a distance of 40 miles. The apparent opacity of flame is attributable to the vividness of the impression of the light on the retina, which obscures the fainter rays from objects beyond. Flame is, indeed, transparent, and its shadow when exposed to a brighter light is caused by the minute portion of unconsumed carbon contained within it. The fact of the transparency of flame may be proved by seeing through it objects lighted by the direct rays of the sun, and the same effect was exhibited by means of the Drummond light—an engraving when so illuminated having been made visible through a bat's-wing *dome* of gas. The practical result to be derived from this consideration of the overpowering effect upon the eye of too brilliant a light is that, in lighting a large room, it is much better to have a number of small lights dispersed about, than to have a strong and dazzling light in the middle. The properties of flame, and the effect of cooling influences on it, were successfully studied by Sir Humphry Davy, and applied practically in the safety-lamp. The wire gauze within which the flame of a Davy lamp is enclosed prevents the inflammation of the explosive gas within from communicating to the surrounding explosive atmosphere, because the flame is cooled by the wire below the point at which the gas can inflame. The effect of the lamp when burning in an inflammable gas was shown by introducing it into a glass vessel filled with the vapour of ether. The flame appeared to be nearly extinguished, though, in fact, combustion was going on at the surface of the gauze; and when the lamp was removed from the vapour the wick rekindled. Previous to the invention of the safety-lamp, miners worked in dangerous parts of the mine by the feeble light afforded by what is called a steel mill, which is an instrument so contrived that, by the rotation of pieces of steel striking against flint, a succession of sparks is produced. These mills are now so completely disused that, on a late occasion, when one was wanted as a specimen for the Museum of Practical Geology, that in the Royal Institution was borrowed for a model to construct one, as none could be found in the coal districts of the north. At the conclusion of the lecture, Prince Albert spoke to Dr. Faraday before he withdrew.

PROFESSOR ANSTED'S LECTURES ON PRACTICAL GEOLOGY.

The third of this interesting course was delivered at the Royal Institution, on the 2d inst., in the presence of a very distinguished assembly, including several of our most eminent *scavans*.

The lecture related chiefly to the presence of water in rocks of different kinds, considered absolutely and relatively, whether it was accumulated upon the face of impermeable beds, or filled subterranean fissures, or reservoirs, or whether it ran over the surface, and only partially saturated its channel. Water was one of the most powerful of mechanical agents, geologically considered, and by far the largest group of phenomena might be traced to its action. It fell from the clouds in the shape of rain, and its obedience to the law of gravitation, and to other laws which governed liquids, produced many of those wonderful changes which geologists knew to have passed over the materials of which the earth's crust was made up. If it fell upon a permeable rock it was absorbed, and, by capillary attraction, gradually sunk deeper and deeper, until it came to some bed which prevented its passing further; and it would then extend laterally, if the bed in which it was would absorb no more. The learned professor then described the circumstances under which springs exist—whether natural springs, land springs, fault springs, springs at a hill side, intermittent springs, or universal and thermal springs. Having given many interesting details on these points, the learned professor then passed to the subject of borings for wells, whether Artesian or otherwise, and then proceeded to discuss the quantities of water available in certain rocks for the supply of large towns. Of these the most productive was, probably, the new red sandstone, when in certain localities; but the capabilities of supply which this bed furnished must also be considered in relation to the demand for that useful and indispensable element. An instance of this was found at Liverpool, which, although situated immediately on an extensive bed of new red sandstone, could not obtain from that source anything like a sufficiency of water for her numerous and increasing population. A scheme had there been long under consideration to collect the surface water of a very considerable district in reservoirs, and convey it to the town, a distance of 24 miles; and here the skill and research of the geologist was indispensable. The Rivington Pike district presented a hilly surface of 17 square miles, upon which, it was calculated, 20,000,000 gallons of water fell per diem; but it required a geological knowledge to decide whether the earth's crust in that district was formed of such materials as would enable the fluid to be gathered. If the water fell upon sand, it would be absorbed; if there were many hollows it would lie in them, and be evaporated; but a close examination showed that the whole district being composed of millstone grit, partly covered with the shaly beds belonging to the coal measures, very little of the water would be lost by penetration. It turned out that the whole of the water which fell on the district might readily be collected into two natural reservoirs, which existed on the side nearest Liverpool. After giving some further details of this gigantic scheme (with which the readers of the *Mining Journal* are, doubtless, familiar), the professor concluded by an allusion to a somewhat similar scheme for the supply of London, which had been projected, the whole success of which, if attempted, would depend upon the accuracy of the geological observations and researches made in respect to the districts from which it was hoped to derive the surface water.

On Thursday, the 9th inst., the lecture related entirely to the nature of materials used for construction, considered in reference to two points—their natural condition, and their capability of economical application; and these consisted entirely of earths and stones, obtained by open workings or quarries. The value of materials of this description depended frequently upon local conditions, which had no reference to the material itself. In our own country, these materials were sometimes associated with conditions which made them of no money value at all, and thus they were very often worth nothing in one

spot, while at another they were of immense value. Slate was a remarkable instance of this kind. A slate quarry on the sea shore was a property of immense value; but slate in the middle of a mountain district was literally of no value at all, although the material was exactly the same, because there were no means of getting it cheaply to market. This country was rich in minerals of every description, but he only proposed to speak of materials of the nature of clay, lime, and sandstones. Clay was a material used indirectly, as in the shape of bricks, of which there were 1,200,000,000 used annually in this country, and it was, therefore, a subject of great importance. In many other countries stone for building could hardly be obtained at all, and there also the condition of brick earth was a matter of great moment. If clay contained alkaline bases, such as soda, potash, or lime, which, when mixed with it, acted as a flux, and would render it more valuable if it were to be fused, would make it utterly valueless for fire bricks, which had to resist a great heat. The clays found in England varied a good deal in this respect. Some contained a large quantity of lime, and were then useful enough for the manufacture of cements, but not so for burning. Many portions of the London clay had this fault; but the lime was, in some cases, found intermixed in distinct bands, which rendered separation easy. A pure clay, without an admixture of alkaline bases, was, however, the best for bricks; thus, in England, or in a colony, the lore of the geologist was invaluable in deciding whether a mass of clay earth would be available, or otherwise, for brickmaking, although, doubtless, chemical condition had here very much to do with its applicability. The other clays were used in quantities, which were small as compared with the great mass of this kind of rock in the country. Pipeclay, for instance, was one of these; it required to be plastic, and sand, which was an advantage in brickclay, was highly injurious to it. Fuller's earth was another clay, but of a most peculiar character, inasmuch as it was capable of almost perfect solution in water. It did not differ much in appearance from other earths, and an engineer might cut through a bed without marking the difference. The contractor would find that it worked easily, but there was nothing to indicate to the ordinary observer that it possessed this peculiar quality; and thus, when rain came, the bed would be seriously affected, and the works, perhaps, endangered. An engineer who possessed a knowledge of geology would not fall into this error, and, on finding a bed, would have it subjected to a particular treatment, to avoid evil consequences. Porcelain clay was an important material; it was composed of quartz, felspar, and mica, in a peculiar condition. The felspar was decomposed, and deprived of some of its elementary substances. The mica and quartz were also changed a little, and the whole mass having become disintegrated, it was subjected to the action of water. The harder parts of the quartz would be rolled away in pebbles, and the rest resolved into a fine mud, which would be deposited wherever the water settled, making a natural bed of porcelain clay. This material was obtained in the largest quantity in Cornwall, where felspar abounded. The value of this material would be at once seen, when he stated that 8000 tons of the finer kinds, 25,000 of the coarser kinds, and more than 5000 tons of china-stone, nearly 40,000 tons in the whole, were derived yearly from the decomposed granite of Cornwall.

Slate was a claystone which had undergone considerable change of condition and alteration of structure. It was remarkable in having a distinct cleavage, and that without reference to the original position of the beds. (This peculiarity was illustrated by a reference to diagrams.) The learned professor then described the principal slate quarries in Great Britain, including those at Penryn, in North Wales; at Balahulish, in Scotland; at Swithlands, in Leicestershire; and in Cornwall; and passed on to the consideration of stones for building purposes, more properly so called. The cost of labour and of transport entered largely into the question of value, in respect to building stones. Its existence in large slabs was a material point; and in looking for rocks of this kind it might be thought that where Nature had laid bare a bold escarpment of rock, or where large masses of the material were laid bare naturally, where cliffs and precipices exhibited immense quantities of stone at the surface, there would be the place to quarry; but practically it was just the reverse. Where large quantities of stone were thus laid bare, it was invariably much weathered, and so split up, and divided into fragmentary masses, that quarrying could not be carried on to advantage. It was, besides, a well-known fact that stone was very different at a few yards below the surface to what it was when exposed to the weather, and thus it was usual to seek for it from beneath the exterior of the earth's crust rather than on the top. Rocks, too, which seemed to bear exposure naturally very well, often owed their preservation to the formation of lichens on their surface; but when they came to be quarried, and used in situations where (being exposed to sooty atmospheres and their pyroigneous acids) the formation of lichens was impossible, they soon wore away. Stones which had no inherent power to resist the moisture absorbed it constantly from our climate in large quantities, and then when the frosts of winter came that moisture was expanded, and the face of the work destroyed. This was seen in a remarkable degree at the cathedrals of Bath and Bristol, and at Oxford, where the colleges were built of similar stone, and which now wore the aspect of extreme antiquity, although comparatively of recent date. The selection of stone for building, with reference to its power of resisting the weather, was of the utmost importance. An ingenious Frenchman, named M. Brard, had found out a mode of imitating Nature in respect to the action of the weather. He boiled violently 2-in. cubes of the stones to be tested in a solution of sulphate of soda, of about 1 lb. to the quart, and then suspended each cube over a vessel containing the liquid in which it had been boiled. On the face of the cubes crystals formed, which, being washed off by dipping in the liquid, gave, at the end of a few days, a clue to the relative value of stones by their loss of weight. Some stones would lose in this way only the tenth of a grain, while others would lose 20 grains, which was a vast difference. Specific gravity and power of adhesion were two important particulars in respect to the value of stones. The professor then compared the Portland stone and the Bath stone. The specific gravity of one was 145 lbs. to the cubic foot, and the other only 116 lbs.; the one lost by Brard's process only 3 grs., while the other lost 10 grs.; the one bore a weight of 2000 lbs. without cracking, and 2000 lbs. more before it crushed; the other bore 1280 lbs. without cracking, and what was a still more remarkable difference, only 220 lbs. more before it crushed. The two most remarkable buildings, exhibiting the peculiar qualities of these stones, were St. Paul's Cathedral and Henry the Seventh's chapel at Westminster. The Portland stone of the former resisted the weather so well, that the marks of the chisel could even yet be found upon it; while the Bath stone of the latter had lost its face to such a degree, that the ornaments, in some cases, were completely obliterated. It was obvious also that the Bath stone could never have borne the weight of such a superstructure as that of St. Paul's. The only other limestone he had time to mention was that of which the new Houses of Parliament were constructed. It was quarried at Bolsover, on the borders of Nottingham and Derbyshire. It bore 5000 lbs. without cracking, and 8000 lbs. more before crushing, showing a cohesive power twice as great even as that of Portland stone.

Sandstones generally were of less value than limestones for enduring structures. The stone of which the new city of Edinburgh was built was a remarkable exception to this rule. It was of very excellent quality, had a beautiful appearance, and was tolerably durable. It could be obtained in any quantity, and was worked easily and economically; it was, therefore, a building stone of the very best quality.

How important, then, as well as interesting, was a knowledge of all these facts with reference to the buildings we erected, whether they were palaces or temples to last for ages, or the cottages of the poor which required no such time-defying characteristics, and how directly all these formations had reference to the natural history of the subject. Whichever way he turned, he found our appreciation of the hardness and durability of materials dependent on their history, or at least upon our knowledge of that history, a reference to which, and to similar histories in respect to other natural facts, was our only means of making these materials useful to the full extent of their capability of usefulness. Where no stone existed, other materials had to be employed, such as brick, cements, and artificial stones, and these substances might thus become even of national importance. A great deal of artificial stone was used in the interior of the Houses of Parliament, and this material was constructed by means of a close analysis of existing stones, and a strict observation of the circumstances under which they exhibited decomposition; the only way being in such cases to imitate what Nature had done, after it had been as fully made out as possible what she had done, and how she had done it. The monuments of Nature were seen in her mountain peaks, which retained their bold outline, despite the storms of winter and the heats of summer. It was not that they need remain for ever in the state they were, but the same forms were repeated, and for ever they would appear to be the same. Her signs, too, were seen in the bold cliffs which in so many forms of beauty jutted out from the rock-bound coast, and seemed to defy the ocean, and not less in the low outline of hills which gave such a peculiar picturesque ensemble to our landscapes. Viewing all these marks, the eye of the geologist determined unerringly the exact localities where the mineral treasures of the earth might be best sought for and obtained, where her most enduring materials might be best quarried, and brought away for future use at some far distant spot. There was always a relation between the beautiful in Nature, and the valuable and the useful; her magic chisel fashioned the rock, and shaped the mountain into forms far more beautiful than ever graced the sculptor's marble; and her works had only to be understood to demonstrate not only their beauty, their interest, their wonders, but their essential usefulness. (Cheers.)

GEOLOGICAL SOCIETY.

MAY 9.—SIR CHARLES LYELL (President) in the chair.

Lord Alfred Churchill was elected a fellow. The following communications were read:—

1. A Sketch of the Geology of Spain, by Don J. Ezquerria del Bayo. The author of the paper stated that the western portion of Spain is principally occupied by crystalline or gneissoid rocks. The copper deposits of Rio-Tinto, and the argentiferous veins in the province of Guadalaxara, occur in the gneiss. The lead and copper mines of the district of Linares, the tin mines of Monterey, in Gallia, those near Zamora, and the lead and antimony mines



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From this it will be observed that, although the operations were almost en-



tirely confined to one lode, 27,400 tons of copper ore were sold at upwards of 6l. per ton, notwithstanding the depression of the metal market during a long period, and although wages and every description of mining materials were in most cases nearly 100 per cent. dearer than they now are, which appears to justify the remark in the report of Oct., 1819, that Wheal Crebor was "an instance of one of the largest undivided deposits of ore in the district." It has also to be borne in mind, that mining operations generally, but chiefly the modes of crushing and dressing the ore, were then comparatively much more expensive. Four shafts had been sunk—viz.: Cock's, Smith's, Kelly's, and Rundle's, to the respective depths of 45 fms., 100 fms., 135 fms., and 104 fms. from the surface. Rundle's shaft is the westernmost, and we are informed that about 30,000l. worth of ore was raised from it; but, being at the boundary of the sett, the levels could not be extended further, and the then proprietor of the adjoining land declined to grant it. From this fact, and from other causes, among which the adventurers were unwilling to incur the expense of sinking deeper, and without operating on any of the parallel lodes, the works were abandoned about the year 1828.

In 1844, a company, divided into 128 shares, was formed, with the object of giving trial to the parallel lodes, and the sum of about 2000l. expended in the erection of machinery, clearing up the adit, &c.; but, in 1846, the railway panic, the depressed state of mining about that time, and the inability of some of the adventurers to pay the calls, caused the suspension of the works.

The present company is divided into 1024 shares, upon which a call of 1l. 10s. per share has been made. The sum of 325l. is to be paid for the sett and materials, including a substantial water-wheel erected, flat-rods, &c.—the former adventurers taking 174 shares in the new concern, upon which they pay all calls, including the first; but one of the most important and valuable features is the acquisition of a lease of maiden ground, 200 or 300 fms. in extent, at the old western boundary, so that the old levels can be continued on the same course that proved so valuable formerly. Mr. Wolferstan, of the British United (who has reported on this property, together with Mr. Adam Murray, jun., &c.), considers this a very important addition to the sett, and observes—"Some pits were sunk about two years since in the new ground, and the back of the main lode seems; but they are now filled in. I am informed, on good authority, that the gossan, and other indications, were highly encouraging, and that the drive in the old workings can be continued under this part of the sett; and it can, therefore, be developed at a moderate cost." Rundle's shaft (the westernmost) is 48 fms. to the adit, and 56 fms. below the adit. Mr. Murray confirms Mr. Wolferstan's opinion; and recommends that the 40 fm. level from the surface should be driven west on the course of the lode, as an exploratory level. Great expectations are entertained from the new ground—the indications being very encouraging, and from the fact of so large a quantity of valuable ore having been raised so near the end of the old workings.

With regard to the parallel lodes in both the old and new ground, Mr. Wolferstan observes—"The sett, which is very extensive, immediately adjoins the south part of the Bedford United Mines, and is traversed by the same lodes." The main lode in both sets, he says, is the Liscombe; and that "there are numerous parallel lodes which have been but partially developed in Bedford; and, so far as I can ascertain, to a very limited extent only in Crebor." He then refers to the lodes and country cut by the canal tunnel, and remarks—"Near the entrance of the tunnel, there is a large cross-course, of a most favourable character, and is likely to have a very beneficial influence on any lode it may pass through. In fact, it was about this cross-course that the main lode proved to be so productive and profitable to the former adventurers; and as, by a parity of reasoning, the same influence may be expected to produce the same effects, strong hope may be entertained that the other lodes will make large deposits of ore near where this cross-course may intersect them." By the geological plan of the Tavistock district, it appears that the lodes in Crebor are intersected by three cross-courses; Mr. Wolferstan alludes to one as 5 ft. wide, and very fine. These parallel lodes will probably be intersected by a cross-cut from one of the shafts already sunk. We have been informed that the most experienced miners have expressed very sanguine opinions of one of the south lodes in this sett.

It appears to us that the new company commence operations under great advantages, having, besides those mentioned, the means of obtaining sufficient water-power for pumping to any depth they are likely to go; while the canal also affords convenient and cheap transit to the quays at Morwelham, from which it is distant between three and four miles. We believe that it is not intended to sink under the old workings at present; but, in the meantime, to confine the operations to those points which are likely to yield the earliest profitable results.

[This adventure has been taken up, we understand, through the instrumentality of Mr. J. H. Marchison, whose name is not unknown to our readers; and this fact, together with the names of high standing and considerable experience, which we are glad to see on the committee of management, is a guarantee of the concern being scientifically and economically worked.]

## Original Correspondence.

### THE MANAGEMENT OF MINES.

SIR,—The success of a mine depends greatly upon its management. It is a well-known fact that several mines, now in a profitable position, were but lately on the verge of bankruptcy, the result of incompetent management. Riches were within the grasp of the adventurers, but the managing parties had neither the talent nor energy to develop them. The present belief appears to be, that a board of directors is the best and safest thing to conduct a cost-book adventure; at least, one would imagine so, from the numerous companies which have lately been advertised, with a goodly array of Joneses and Jenkines, Esqrs., as the directors. In the multitude of councillors we are told there is wisdom; but I have ever found that with a multitude of management there is a deal of ignorance and mystery, and but little progress. I have a strong prejudice against cost-book adventures managed by boards of directors. In the first place, directors will not work for nothing, be the adventure either in a prosperous or a bankrupt state; every balance-sheet presents a formidable item, denominated "directors' attendance." "Well," exclaims some generous large-hearted individual, "and would you expect the gentlemen to work for nothing?" Certainly not; if I did expect it, I am pretty sure my anticipations would not be realised. What I want to see is committees in the place of boards of directors. A committee will act gratuitously where directors will not. A board of directors in a cost-book company is an absurdity—a useless, needless, and expensive thing. A committee appointed from two or three of the chief adventurers is quite sufficient, and who will gladly meet and discuss any question which the secretary, or purser, as the case may be, may call them together to decide upon, without being paid for it; but with a board of directors the thing is different. There is a grandeur in the very name of director, which conveys an idea of expensive majesty. If you have a director, you must pay for the luxury; like the lawyer and physician, he must have his fee, whether you derive benefit from his advice or not. There has been much doubt cast upon the management of mines in Cornwall having no official conclaves in London; but let me ask who are the directors of mines managed solely in the metropolis?—Men for whose judgment in mining matters I would not give a straw. In the long established boards, there is nothing else but obstinacy and diversity of opinion upon matters but little understood; in the new companies presumption upon matters not understood at all. There is, generally speaking, in a board of directors a vanity and assumption positively insufferable. They imagine that they can not only manage the financial affairs, but, seated in their board-rooms, can also direct the workings and develop the riches of the mines, without ever even having seen a mine. If a new level is to be driven, the opinion of the directors must be consulted, as if they are the best judges of what is necessary for the development of the mine. The captain is thus cramped in his exertions; and if the mine does not become profitable quite so soon as was anticipated, he is censured, and perhaps discharged, as an incompetent person; whereas, were the cause traced to its fountain-head, it would be found to proceed from the directors' incurable presumption and love of meddling with matters they cannot possibly be competent to decide upon. In most cases, where there is a board of directors, there is a great deal of mystery; the truth is difficult to obtain, the shareholders being able only at general meetings to arrive at something like the true position of the adventure. Where there is mystery and secrecy, there is unfortunately but too frequently deception; and the less we have of that fashionable peccadillo in mining the better will it be for our bank balances and social quietude.

But what I chiefly complain of, Mr. Editor, is that the system of managing cost-book adventures by boards of directors, composed of perfect ignoramuses so far as mining is concerned, is daily becoming, to all appearances, more prevalent. I feel confident that the change from the old established custom will be anything but productive of general benefit. Though we live in an enlightened age, I doubt if we exist in one so substantially wise as days long past. We have a host of improvements, but no real good emanating from them—daring innovations, whose only result will be the certain and inevitable fate of human presumption, discomfiture and ruin. The time-honoured systems of our forefathers were based upon sound reason and universal justice; our modern systems aim at universal aggrandisement. A system that of old could be carried out by one able hand, now must have the united wisdom of a dozen craniums to effect its operation. We are either lamentably degenerated in point of

intellect, Mr. Editor, or else the rapacity for gain is greater with us than it was with our sires.

Management by boards of directors, especially modern ones, cannot be too strongly deprecated. Your director is, generally speaking, an individual of a delicate sensibility, and of a peculiar languid temperament, which nothing but a golden balm can renovate. Do not imagine, Mr. Editor, that, like your own immaculate brotherhood, the directorial fraternity are all philanthropy and disinterestedness. The chief trait in a director's character is a burning desire to advance his own interests, and an unscrupulous feeling as to how his object is attained. I am rather severe, but these new systems need severity. I would see them checked, knowing well their object and tendency. Some future time I may address you again upon the subject; in the meantime, I subscribe myself

Camborne, May 14.

MATTHEW MENDIC.

### DEVON GREAT CONSOLS.

SIR,—Would it not be an instance of wisdom in the directors of these extensive and valuable mines to give the subject of a railway thence to Morwelham a greater measure of attention than they appear to have bestowed upon it? I am aware that they have not omitted all attempts to secure for themselves such a desideratum; but the fact that no such railway exists, nor progress, is the basis of my opinion, that every effort has not been made to obtain it. A gentleman, conversant with all the proceedings of the company, informed me that there were insuperable obstacles standing in the way—that the owner of the land which would be required for the railway would not consent to sell it; and, if he would consent to sell, another obstacle, in the shape of an Act of Parliament for rendering navigable the River Tamar, should successfully resist the obtaining of an Act for the construction of this railway. I can point out a way in which, I think, it can be made without the concurrence of either the owner of the land or of Parliament; but, in the first place, I would be quite sure that I could not obtain the consent of both, or at least of the owner. In all mining leases which I have read, I think there is contained a grant of liberty to erect all ways and conveniences for carrying on the mining operations. I have no mine lease at hand, and, therefore, cannot quote the words; but I have an impression that the grant in every lease confers a liberty to do anything, within the limits of the sett, that may be found necessary for carrying on the works; and one thing quite necessary is to transmit the copper ore to a place of shipment; and another thing, just as necessary, is to convey wood and materials to, and for the use of, the mines. For this transit, or conveyance, a railway would be a much superior thing to the present hilly and circuitous road, and considerably less expensive. My plan, then, would be for the lessees of the three sets, comprising all the distance from these mines to Morwelham, to enter into an agreement amongst themselves for laying down a railway throughout the whole distance. I do not think that anything, either in law or equity, could prevent such a course. Each lessee can lay the line through his own sett. I should certainly try that plan, in the event of a failure of the usual mode. At the expiration of the leases, and of any future leases, the rails should be removed, unless purchased by the landowner, or permitted to remain for the use of the neighbourhood, for which they would be a great accommodation.

It is a very common circumstance to witness railways made by mine adventurers for the use of their mines. They may be seen in every large mine, and in many small ones. The railways at Carn Brea Mines, made by that company, measure, I believe, more than a mile. Now, if it is lawful to construct a railway through a part of a sett, it must be lawful to extend it, if need be, through the entire sett; and if it be lawful to remove a short railway from a mine, it must be lawful to remove a long one; and I conceive that a railway is no more attached to the freehold than a whim, flat-rod, or water-wheel. For the lord to require a railway to be left on the mine at the end of the term, without a consideration, is preposterous in the extreme. He could as reasonably require the engines and other machinery, and the account-house furniture, to be left there without payment. What objection the owner could urge in reference to this railway, I know not, except that the birds and hares would be scared off the line! I should think, however, that the arguments in favour of railway for the use of a company paying him about 9000l. per annum, would outweigh the argument in favour of birds and hares, which animals are distant from his cottage about three miles.—R. SYMONS: *Truro*, May 10.

### DEVON GREAT CONSOLS.

SIR,—I find from the report, in your last Number, of the annual meeting of the proprietors of the Devon Great Consolidated Mines, that Mr. J. H. Hitchens, the late superintending engineer or agent of those mines, sent in his resignation of his situation as such agent—which resignation was accepted—but offering his services as the mineral surveyor of the company, which offer was also accepted. I do not know of what value the new situation may be to Mr. Hitchens, but if it should be of less value than the previous one (which I assume is the case, for mineral surveys are not wanted every week), I beg to express my regret that the proprietors did not decline to accept of the resignation, unless absolutely forced upon them. Considering that the proprietors are mainly, if not exclusively, indebted to that gentleman for their valuable property in those mines, I think that gratitude should have influenced them to retain him so long as it was in his power to serve them at all. It is usual in this county to grant to the author of a rich mine a good permanent post connected with the management thereof. Mr. Hitchens is a clever man in the science of mining, and his general character is such as to merit the high esteem in which he is held where he is known.—R. S.: *Truro*, May 16.

### ILLOGAN AND CAMBORNE MINING DISTRICT.

SIR,—My patrons, the subscribers for the map of this district, are fairly entitled to an explanation of the cause of the delay in its publication; I shall, therefore, feel obliged by your insertion of this short notice. The delay has been owing to two causes. Firstly, the want of many good surface plans of mines, which I have now supplied; and, secondly, to my other ordinary employment. But I am happy to say that my map is about to be put into the hands of the printer, who has promised to give it his best attention. My friends may, therefore, calculate on being furnished with copies of a map of this most important mining district, of an unexceptionable character, at an early period.—R. SYMONS: *Truro*, May 16.

### REMARKS ON MR. EVAN HOPKINS'S WORK, "ON TERRESTRIAL MAGNETISM."

SIR,—A few weeks since Mr. A. Dumaresq referred Mr. Hitchens for an answer to his remarks in your Journal to the above work; I have since had the pleasure of reading it. The theory of terrestrial magnetism is almost new to the mining world, and not yet sufficiently developed for a sure guide; but its effect is very clearly shown in the plates, and it is with pleasure that I acknowledge it to be the most instructive work for the miner's guide that I have yet read. The author has come out so boldly in opposition to the school-taught theory, as to crystalline rocks and mountains being of igneous origin, as to ensure its meeting the views of nine-tenths of the practical miners. Most miners take a different view of the origin of the rocks, mountains, and lodes or veins, from the law laid down by geological societies and professional men. There certainly are a few that may be inclined to think that the cinder-like stones found in the gossan on the back of lodes, and the native metals, are produced by great heat in the earth; but the great majority believe, and know, it to be produced by nothing more than a slow chemical action gradually going on in the earth, from different substances meeting, acting, and combining with each other, without any of these great heats, as attempted by many to belaud down as a law for the miner's guide. If the mountains were formed on the igneous principle, when did it cease acting? There is no record on mining that gives the slightest hint as to any miner ever coming in contact with any of these natural melting processes; if they ceased before mining commenced, these veins must have remained stationary ever since; but few practical men believe this to be the case, their daily experience of the earth's natural laws tell them otherwise; and I should recommend every mine agent that does not fancy himself sufficiently learned, and the practical miner who thinks some day to encircle himself in the duck jacket, to lose no time in obtaining one of this talented man's books; it will give them an insight in so many ways as to these metallic formations, as will call their attention to corroborating facts when in mines, that cannot fail to expand their views, and enable them to establish some of the earth's natural laws. I have no doubt but many men will be inclined to dispute with the author as to the correctness of some of his rules laid down, and I should have been highly pleased to have met him to discuss some of them; but few men's works are perfect; if any of these are not correct, they will be instrumental to bring out facts when in the practical miner's hands. I hope the leading members of geological societies, and professional men, will not think I am out of place when I tell them that to my view their field is the chemical part of mining, as I never inspected a rich mine yet but I found some peculiarities in the stratum about it, and its direction to the lode; and I think most miners have noticed in mines that were once rich, and all the lode had been worked away even to the surface, that the strata still continue to bring

in strong mineral salts, which corrode and colour the sides. When levels are extended for long distances, from the good into the poor and unproductive ground, this corroding and colouring ceases, which is a clear proof that these mineralised portions of the strata have their due effect when meeting the lodes. Were these men to turn their attention to the analysing of the strata about lodes, which appear to have such material effect, they would soon become useful men. Hitherto they have been inexperienced or unfortunate generals in mining operations, as victory has never crowned the day.

Treborough House, May 9.

### ON THE SILVER MINES OF CORNWALL.

SIR,—I say, with Mr. Ennor, it is with pleasure I look over your interesting columns; and, on reading his productions in your Journal of the 4th inst., was rather surprised at his saying he is not an advocate for working silver mines, and asks the advocates of silver mines to tell him of one that ever paid expenses. This would be rather a difficult task for persons not having had to do with them. Mr. Ennor says, he happened to first discover the silver in Wheal Duchy, about 40 years ago, and took out 1000l. worth the first week, a large portion of it native silver. As to 40 years since, if dates be true, the mine was opened in 1802, and much silver raised by Uncle Wick Nicholas, who at that time lived at East Harrowbarrow, and Mr. Ennor lived with his father at Cold East, near Harrowbarrow, the first place he lived in after coming from his well-known parish, in the west, which I think was in the year 1810 or 1811. I think that above 1000l. worth of silver was raised for many weeks; nothing but native silver was then known. As to gossan ore, be it as rich as it might, unless it would "plate" (ductile) under the hammer, was not considered worth saving, as was most satisfactorily known by Mrs. Ennor's father's brother, who sold thousands of tons of gossan to Mr. Lucas, which had been left in large piles on surface in Mr. Ennor's boyhood, varying in value from 30l. to 50l. per ton. After the surface piles were removed, the same persons commenced underground about 1828 or 1829, and worked profitably for many years above the adit level. Hence their lease expired, when the sett was granted to Robert Malach, in 1833. Just after which a 40-feet water-wheel was built, and the water drawn out of the mine, which was 10 fms. under adit, with a few sinks under that level; the whole of the stulls (deads left after the vein is worked) left in Mr. Ennor's day were taken away, and sold for from 10l. to 12l. per ton. I really cannot tell, Mr. Editor, why a silver lode should not pay for working, if properly managed, as well as if blended with lead; and I doubt not if Wheal Duchy (Wheal Brothers) were to compare notes of produce sold with Treburget, the advantage would be in favour of Wheal Brothers. Mr. Ennor ought now to remember, that many boys have been taught the art of assaying within the last 20 years, and I think there are now a score assay offices and assay furnaces in Calstock and Callington; but in Mr. Ennor's boyhood nothing was considered silver that would not remain on a shovel over the blacksmith's fire. I think Mr. Ennor had an assay furnace at Treburget, but I question if he could use it; and if his knowledge of silver has often served him thus, I expect he has left many a fortune for children yet unborn.

Perhaps Mr. Ennor will be candid enough to say if he and his father did not apply to David Horndon, Esq., of Callington, for the sett of Wheal David, now Wheal Langford, after Wheal St. Vincent party had traced the lode close up to the spot where Wheal David shaft was afterwards sunk.—S. S.: *May 8*.

### SILVER MINES IN CORNWALL.

SIR,—My attention was arrested on reading a letter, by Mr. Ennor, about the silver mines of Cornwall, inserted in your Journal the week before last; and I must say I, with many others in this neighbourhood, was surprised at the unjust manner in which he cautioned adventurers against investing their capital in the working of silver mines in this county; and his stating, solely from his own imagination, that, should any be found to do so, the result would be ruinous. I will not now enter fully into a debate on that subject, as I have no doubt his letter will be answered by others more competent to reply to it than myself. One remark of Mr. Ennor's I must not allow to pass unnoticed. He states, "there would be no difficulty in pointing out a hundred mines in the county which have been worked for silver;" but I am in a position to assert that, at the outside, not more than one-third of that number have been worked. Mr. Ennor's experience, from his long connection with mining matters, is entitled to some respect; but I think he ought to be more careful and guarded in expressing so decided an opinion upon the futility of embarking in a speculation which is considered by many, equally as experienced as himself, as likely to prove a profitable investment of their capital.

Calstock, May 15.

### MENDIP HILLS MINING COMPANY.

SIR,—As I find there is to be a general meeting in London next week of the shareholders in this company, and as I shall not be able to attend, I trust some shareholder will call for Mr. Johnson's report on the works, in order that we may be able to judge for ourselves how far it has conduced towards the recent depression in the value of our property.

London, May 14.

A SHAREHOLDER.

### BWLCH CONSOLS MINES—LONDON AND LOCAL MANAGEMENT.

SIR,—As there has been, for a long time, some ill-blood stirring between a coterie in the City and myself, with respect to the Bwlch Consols Mines, which has afforded food for much comment, both to those interested and uninterested in the concern, it may not be amiss, with a view to a better understanding of the matter, to place a few of the leading features of this vexed question before the public, by means of your valuable columns, so that they may have the means of judging fairly between us. I do not intend to deny that some of my estimates have been drawn up in a sanguine spirit, but I contend, from what the mine did when it had fair play, that there was some reason for a feeling of triumph, and for looking forward with cheerful confidence to the future. The mine was undertaken in the August of 1847, under my promises of raising 60 tons a month. In June, 1848, the great wheel and field of machinery were completed. Now, here it is necessary to remark upon the roof of the evil that accompanied the mine through all its proceedings, and which evils are not quite shaken off at this moment—which was, that the merchants' accounts for supplies and machinery had been allowed to accumulate, and then stood unliquidated against the mine, amounting to a large sum of money. In July, the first month after the machinery was completed, 70 tons of ore were raised and dressed, which at 12l. a ton, free of royalty (a fair price at the time), yielded a profit of 200l., taking the running cost of the mine, freed of extraneous matter. In August, the second month, the raising was 46 tons, at 12l. a ton, making 552l., and leaving a loss upon working cost of 80l., being the only month showing a real loss, for a succession of 12 months. In September, the third month, the raising was 86 tons, worth free of royalty 1032l., the working cost being 630l., left a profit of 400l.; but instead of 630l., the cost is augmented by back charges to 1314l. The fourth month (October) the returns rose to 105 tons, worth 1260l., the working cost was 620l., leaving a profit of 640l. One would think that this would have been sufficient to satisfy the most ravenous miner, and that it would be a pity to destroy the prospects of such a prosperous undertaking; but, on the contrary, with the London management this was the happy juncture for a bold stroke of financial policy; so in they stepped, and sold 6000l. worth of ore before it was raised, and almost before the shafts were sunk for it, receiving 3000l. in ready money, and leaving the mine to hobble on after the shock, and meet all its emergencies upon what it could realise, by sending its ore to the smelters at 5l. a ton (the settling price being 11l. 5s., and the royalty 25s., leaving just 5l. a ton clear, or half the ore money); the inevitable result of such a proceeding is easily conceived. The merchants' accounts, past and future, could not be paid, and all operations of opening fresh ore ground had, of necessity, to be suspended. The only payment that could possibly be managed at all, and that with difficulty, was that of wages of men for digging the ore; and to stimulate this proceeding, the general tenor of the London correspondence ran to this effect, rather too common a parallel in London management—"Dress up the ore," "go on to sample," "how much ore is there ready?" I could show some scores of letters, in which this lucid line of instruction was kept up, unrelieved by any suggestion of other tendency, as if the only thread that worked the brains that penned these letters was agitated by the fear that the local agent, whose whole efforts were directed to opening and working the ore systematically, should forget to send it to market, after it was so obtained. Surely a man with only one idea floating in his cranium, ought not to be prevented from using it, but what I complain of is, that he should do so *ad nauseum*.

Now, it is evident, from the nature of the arrangement I have alluded to, that only the proceeds of 5l. per ton could be made available for working the mine; and I appeal to any man of common sense to judge as to whether the mine was not, from this circumstance, effectually ruined, until some substantial arrangement could be devised and entered into to renew its impetus. I am sure that the richest lead mine in Cardiganshire could not have recovered from such a blow without external assistance; but, notwithstanding these disadvantageous circumstances, the mine went on, and returned 70 tons a month for 10 months after the occurrence, when the best bodies of ore ground became exhausted. I will ask of any man of the least acquaintance with business, whether any branch of commerce, however good in its nature, could flourish after its working capital had been abstracted, and its resources paralysed to such an extent?—or whether there has ever anything been displayed in the annals of mining so reckless, pernicious, and so extravagant as the London management of the Bwlch Consols Mines? I am glad to say that the mine now has so far recovered its position that the shafts are sunk for 15 fathoms of whole ore ground in the western part of the mine, and 10 fms. in the eastern; and I expect the value of the property, after great sacrifices, is now re-established. I hope, after being so well abused, by a clique whose motives henceforward will be seen to have originated in mercenary propensities, that I shall stand acquitted of all blame, intentional or accidental, in my position as local agent of the mine, which must be considered entirely separate (except in so far as contributing my proportion to the expenses) from all pecuniary matters and management.—MATTHEW FRANCIS: *Goginan*, May 14.



## WHEEL ANDERTON MINE.

Sir,—As there is but one adventurer in Wheel Anderton Mine whose initials are "T. B." and who I have a right to presume, in the absence of other data, to be your correspondent of the 4th and 11th inst., I shall feel obliged if you can furnish me with that gentleman's address—a rule I believe you to observe, in requiring the same from all correspondents—there being a call due on that gentleman's shares, which it is most desirable, if only for regularity sake, should be paid, and at once entered to his credit, which is the only credit I can admit. Surely, Sir, such communications partake more of the character of advertisements than correspondence; and were you to enforce payment, your columns would not be occupied by such worthless contributions. I have before stated that I give my name to my letter; let all do the same; and depend upon it that more useful matter will occupy the space now devoted to disappointed speculators.—JAMES CARPENTER: *Wheel Anderton Mine, May 14.*

## LLWYNMALEES MINING COMPANY.

Sir,—I am induced to address you on the subject of a report of Llwynmalees Mine, which appeared in your Journal of Saturday last, for various reasons. In the first place, the report in question I submit, not having been sent either by myself, Capt. Henry Francis, or any authorised person, ought not to have been published; secondly, the party writing such evidently has an object in grossly misrepresenting what really took place. With this you will receive the chairman's rough minutes, by which you will perceive that Mr. Murchison, who proposed resolutions one and two, had, in reality, only, with his own and Mr. Carey's, 20 shares, and 57 proxies; while I, and other gentlemen present, held 419 shares and 223 proxies. Such a paper as yours ought not to be so imposed upon; and I trust, having been led into error, you will do me the favour, to publish my reply—not that I care as to the false report, but at a distance, to those who do not know all the circumstances of the case, such an unofficial statement may do harm. *No private letters have been received*; for nine gentlemen out of eleven at the meeting admitted having seen, on the same day, such as Mr. Murchison calls private letters, on their receipt by myself. The writer of the article in question admitted that he had never been refused a personal also; I even advised the same party not to sell his shares at a low figure long since, as I have invariably done others, on account of good advice received, which was afterwards fully confirmed in the reports to the board. With reference to his remark on Capt. Henry Francis, I leave that gentleman, of course to defend himself; but I must in justice say, in conclusion, that no captain of a mine ever had at heart more the interest of the adventurers than has Captain Francis since he has had the control of Llwynmalees Mine. I have not hitherto sent reports to your paper respecting this mine for this reason:—We are not in her "as a body" for jobbing purposes, "but investment"; and whether the price per share be more or less it is of no object, as myself and friends are satisfied as to future results. *Cephall-court, May 16.* J. MAITLAND, Purser.

[We have only to observe that, in reference to the remarks appended to the report of the meeting of shareholders in this mine, published in last week's Journal, Mr. Maitland, the purser, has forwarded us the original minutes, by which we find that the proposed resolutions were supported by the proxies of six shareholders, representing 57 shares; while the amendment obtained the support of all present at the meeting (excepting the proposer and seconder of the resolutions), and the proxies of 223 shares—the chairman not voting. In rendering this explanation, we have only to add, that while we are at all times anxious to obtain from correspondents particulars of meetings, and such comments thereon as may seem merited, we are also ever ready to rectify any error which may be fallen into; or to remove such blame or censure as may be shown to have been undeserved.]

## Mining Correspondence.

## BRITISH MINES.

**ALFRED CONSOLS.**—I am sure it will be extremely gratifying to you to receive from me, on the present occasion, the assurance that the reward due to you, as well for your perseverance in the pursuit of the object years ago indicated, as for your patience under so long a series of responses to the calls which your purser has been under the necessity of making on you, has been developing itself for some time past in a more extensive form than I had calculated upon, or reason would allow me to hope for; though it has been my steady opinion, nevertheless, that the first favourable change in the hard and capably character of the mine would be immediately followed by results, however inferior to those which ordinarily fall to the lot of mining speculators. The time having arrived when I can speak out without hesitation, when I feel myself under circumstances which have overcome that sense of embarrassment which commonly affects one who has to report frequently on a poor or dubious undertaking. I propose to present you with more detailed account than usual of the progress we have made in our explorations on the ore, and of the prospects we have in view, in order that you may draw a judgment of your mine for yourselves, as accurately as it is in my power to make you do so. We first received intimation of being in the vicinity of ore in July last year, in the engine-shaft, at a depth of 6 fms. under the 50 fm. level; since that time we have sunk but 14 fms., or down to the 70 fm. level, no more having been accomplished in consequence of several hindrances, occasioned by extra work of considerable magnitude, such as dropping and fixing 30 fms. of plunger and other lifts, and thoroughly repairing and putting in good order sundry dilapidated and rough jobs, at an expense which we considered our previous condition did not justify incurring. In sinking these 14 fms. we did not raise many tons of ore above the 60 fm. level; and, indeed, from this level downwards, when we had got deeper in the bunch, we seldom had what could be properly termed a course of ore extending itself westward further than the centre of the shaft; and at attaining a depth of 8 fms. under the 60 fm. level, we found that the western extremity of the ore, by a slight deviation from its almost perpendicular position, and by dipping a little to the eastward, had left the shaft with nothing more than a large and promising lode. The 60 fm. level east is driven 20 fms. from the engine-shaft, and on a continuous course of ore, varying in value from 25¢ to 40¢, and upwards to 60¢ per fm.; the lode in the end, however, rather disordered at present. Our progress in sinking the mine under the 60, and 5 fms. east of the engine-shaft, has been much retarded by water, which, owing to the compactness of the lode, cannot find the means of escape out at the 70, although the end of that level is almost underneath; this mine is sunk 3½ fms., and contains in its present bottom a course of ore 3½ ft. wide, worth 50¢ per fm.—the value having steadily increased from the commencement, when it was worth 25¢ per fm. The 70 fm. level east is driven 7 fms. 2 ft. from the engine-shaft; owing to the dip before-mentioned, this level was driven on about 2 fms. without much ore, but it then overtook a course which has continued to improve, so that from having been worth 20¢ per fathom, as it was at first, it is now in the present end 5 ft. wide, and worth 50¢ per fm. We set on Saturday last the engine-shaft, to sink under the 70 fm. level, to 12 men, at 25¢ per fm.; the 70 east to eight men, at 8¢ per fm. The 60 east to four men, at 3¢ per fathom; the 60 west to four men, at 4¢ per fathom; the mine under the 60 fm. level to six men and three boys, at 7¢ per fathom. The 50 east to six men, at 50¢ per fm. The rise over the 40, against Wyld's shaft, to four men, at 50¢ per fm. Wyld's shaft to sink under the 20, to six men, at 30¢ per fathom; and the shaft level, west of boundary shaft, to four men, at 4¢ per fathom. On at tribute, three pitches in the back of the 60, east of the engine-shaft—one to six men at 1s. 9d. in 17 (new); one to four men, at 3s. in 17; and one to four men, at 5s. in 17. Allow me now to correct any little misapprehension I conceive some of you may be under with regard to our returns of ore. It is natural you should have said to yourselves—"we certainly have had pleasing accounts from time to time of discoveries and improvements, but where are the proceeds?" I wish to explain to you; however valuable a discovery of ore may be, if in moderately hard ground, as ours is, a considerable time must elapse before much of it can be taken away with advantage. We could have set steps some months ago, and thereby have made large additions to our samplings, but they would have been prosecuted at an immense inconvenience to the regular working of the mine, and the returns from them would have been obtained at a much greater expense than we shall be subject to after waiting for the proper time, or until the ground is sufficiently laid open for room and ventilation. In the back of the 70, for instance, were we to begin at once to stop under the 60, what is explored between the mine and the shaft, we should have to give at the rate of 3s. in 17, whereas, by waiting until we have holed the mine, a pitch will readily set in the back of the 70, at a tribute of 17. 6d. in 17. Hitherto the principal part of the ore sold has been furnished from the places on atwork. The proportion in value of the 65 tons, sold on the 9th inst., is just 288¢, returned on atwork, to 200¢ on tribute, but the latter must soon have the predominance, though the former will also increase. During the past month, ending Saturday last, 31 fms. of ground, driven in the end of the 70 east, and 4 fms. driven and stoped in the 60 east—making together 7½ fms., yielding 19 tons of ore, which 19 tons were dressed, and put in with the quantity last sampled. These 45 tons are superior to any of our former parcels of equal quantity, the difference being in consequence of the improvement in the quality of the portion obtained from the end of the 70. I conclude by saying that the engine is working at the rate of seven strokes per minute, and calculated to keep the water to the 100 fm. level, with the present pitwork; and that our next sampling for the month will be about 80 tons, full half of which will be best ore.

**BARRISTOWN.**—The lode in the 26 fm. level end is about 1 ft. wide, well mixed with lead. The lode in the 30 fm. level end east, on the east and west side, is improving, producing full 7 cwt. of lead per fm. In the stopes behind this end, in the bottom of the level, the lode will produce 1 ton of lead per fm. The mine sinking under the 30 fm. level is going on progressively, and the lode continuing pretty good and regular. We shall not cut this lode in the 40 fm. level as soon as we anticipated, the ground is not so favourable for driving. The new lode end west is poor. In the 30 fm. level end west, on the east and west side, we have no change.

**BEDFORD UNITED.**—The ground in the 115 fm. level south is without alteration. We have not yet cut the lode in the 103 fm. level. There has been no lode taken down in the 90 and 80 fm. levels. The lode in Andrew's winze, in the 103 fm. level, is producing good saving work, and very promising. In the 70 fm. level east the lode is 24 ft. wide, producing stones of black and yellow ore and lead—good saving work. The 47 fm. level cross-cut north is progressing favourably.

**CARTHEW CONSOLS.**—The engine-shaft is now sunk within about 2 ft. of the 75 fm. level, and continues in very good ground; the lode in it produces some good work in lead. The rise in the back of the 65 fm. level north is holed to the 55 fm. level, which affords good ventilation in this part of the mine; we have again commenced driving the end in the 65 fm. level north, and find the lode very good in copper; we have of late, in this level south, driven through a good run of lead ground about 8 fathoms in length; to-day the lode is not found so rich, but the ground is very good. The cross-cut in the 18 fm. level south is, for the present, suspended, and also the adit level. At the lower mine an improvement is found in the tribute this week, in the discovery of a very good lode in copper in a pitch in the 65 fm. level north. In any other part I find nothing new of importance. The boiler, which is an exceedingly good one, was brought on the mine yesterday, and no time will be lost in getting it fixed. The crusher-house is in a rapid course of building, and every other part of the work which is to be done in the mine for the engine is in a very forward state; but I am sorry to say that the founders are not so far advanced with the castings as I could wish, though I am urging them on as much as possible. I have this day received the assay of the parcel of copper ore, which is 9 per cent.

**COMBLAWN.**—We have hove in all our heavy work belonging to the engine, such as boiler, cylinder, bob, and shears, and fixed our first piece of main-rod. We have also the capstan rope, and all our pit-work on the mine, and hope to put the engine to work on the 27th inst.

**EAST CROWDALE.**—Since my last report the lode in middle shaft has very much improved; we have now a good branch of tin. No important alterations in any other part of the mine. The 25 fm. level has reached the point to drive the cross-cut to Harris's shaft.

**ESGAIR LEE.**—The caunter lode, in the deep adit, west of the junction, is not improved since my last; the colour of the stratum about it at present appears rather dark for lead; the lode is large, with much muddle and quartz, but poor for lead. The caunter lode, in the 12 fm. level east from surface, for the last 3 or 3 ft. in driving, has not been so productive as for some time past, yielding at present about 10 cwt. of ore per fm. The same lode in the winze sinking below this level is much the same as last reported, yielding about 20 cwt. of ore per fm. The lode in the stopes, in the bottom of the shallow adit, west of Morgan's winze, is looking very promising, and will yield on an average from 15 to 20 cwt. of ore per fm. The wheel-axis is now in its place, and we are waiting the arrival of the segments of the wheel at Aberystwyth.

**HEIGSTON DOWN CONSOLS.**—The lode in the 35 fm. level, east of the cross-cut, is 3 ft. 6 in. wide, with a leader of ore, 8 in. wide, of superior quality; the cross-cut in this level, towards the south lode, is without alteration since last reported on. The cross-cut south of the winze, in the 45 fm. level, is also without important alteration. The lode in the 45 fm. level, east of the winze, is very much improved since last reported on, it being 4 ft. wide, 2 ft. 6 in. of which is gossan of the finest description, spotted throughout with yellow copper ore.

**HOLMBUSH.**—The lode in the 132 fm. level, west of the diagonal shaft, is 1 ft. wide, composed of spar and stones of copper ore. The lode in the 120 fm. level south is 5 ft. wide, composed of quartz and stones of lead, saving work. The ground in the 130 fm. level cross-cut south is still favourable, and also producing stones of lead. The flap-jack lode in the 100 fm. level, east of the great cross-course, is 2 ft. wide, composed of spar, muddle, and copper ore, producing 1 ton of the latter per fm. The pitches in the back of the level are much the same as when last reported on.

**KINGSETT AND BEDFORD.**—The rise near Carpenter's shaft is much improved the last few days; the lode is 5 ft. wide, and is producing some excellent stones of lead—the last taking down far exceeded any thing before seen in this part; the end driving south of the rise is also improved; the lode is 6 ft. wide, with some rich stones of lead; the rise in the back of this level presents a very favourable appearance, with some good stones of lead. We expect shortly to unwater the old workings, about 25 fms. above us, where there is a good course of lead gone down, as we have cut a large stream of water in the rise, which we expect proceeds from the workings above us. Our large wheel is completed, and crusher, drawing machine, stamps, &c., in course of erection. No time will be lost in getting it completed, after which we hope regularly to send lead to market.

**KIRKCUDBRIGHTSHIRE.**—In Stewart's shaft the lode is 5½ ft. wide, a very kindly spar with it, yielding 6 cwt. of lead to the fm. In the 62 end west the lode is 4 ft. wide, with fine stones of ore, yielding 6 cwt. to the fm. The lode is very large in the 50 end west, it is now making a little spar again, with spots of ore. We have shipped off a cargo of lead ore again this week.

**LLWYNMALEES.**—In the 8 fm. level west we have very good ore—in fact, it is to-day much as last reported. The two stopes in the back of the 8 fm. level west contain a great deal of ore, and look quite as well as I have ever seen them. We have been idle in the 14 fm. level west during the week; the stream of water in the end of this level has much increased, and it is only whilst our wheel is crushing that we are enabled to fork any of it. We do not at present work the wheel by night, as if we do we will run short of water, this will soon be obviated, as the walls of the engine and boiler-house are now over the foot high.

**LAMHEROEE WHEEL MARIA.**—I beg to hand you a statement of the different lengths we have driven in our end and cross-cuts at the engine-shaft:—Cross-cut north in the 60 fm. level, 15 fms., and east in the 60 fm. level, 6 fms. 3 ft.—we intend taking down the lode in this end on Monday next; in the end west, in the 60, we have driven by the side of the lode 8 fms., and shall cut through it, to ascertain its size and value, at the close of next week; and east in the 50 fm. level, 4 fms.; at Davey's shaft, end driven north in the 50 fm. level, 11 fms., and shall have about 5 fms. before we intersect the lode cut in the 30 fm. level; end south, 7 fms. The following is a further assay of the tin lode, by Mr. C. Hinks:—This is a remarkably clean and fine sample of tin ore, and gives 71.3 per cent. of pure ore. I enclose you a sample of the metal as obtained direct from the ore.

**SOUTH WALES MINES.**—The south or Frongoch lode, in the 12 fathom level, east of the cross-cut, is much the same in appearance as for some time past, being composed of quartz and stones of copper ore, and producing a little lead, but not sufficient to set a value on. I cannot speak of any alterations since my last in the old workings, the lode being 4 ft. wide, with several small branches of ore running through it, and thus a promising appearance.

**SOUTH WHEAL JOSIAH.**—The adit end driving on the Wheal Jack Thomas lode is a little improved since my last; although the ground is a little harder, there is more ore in the lode. Towards the south part of the mine we have discovered a fine looking lode, which we call a tin lode, as it has been worked extensively on the backs for tin, and is now producing some good work; but I believe it will make a copper lode in depth, as we have fine gossan, spar, and greens in the shaft, sinking on the same about 4 fms. from the surface.

**TRESCOLL.**—According to your wish, I have sent you some specimens of the rich course of tin in this mine; the lode at this time is about 2 feet high, 1 foot of it nearly as good as the specimens I have sent you. We have also two other good lodes at this time as good as the specimens I have sent you. The lode in the 100 fm. level, west of the engine-shaft, is looking very rich at this time. I must impress on your mind that this course of tin is not a bunch, as we have taken hundreds of pounds from the same course, and traced the same from the adit to this place. We shall every week be cutting fresh lodes at the bottom level; and no doubt they will be good, as some of them were good at the adit level.

**TRELEIGH CONSOLS.**—In the 100 fm. level, west of Garden's shaft, on Christie's lode, the lode is 4 ft. wide, with stones of ore. In the 90, west of ditto, lode 18 in. wide, worth 3¢ per fm. In the 80, west of cross-cut, on north part, lode 1 ft. wide, with stones of ore. In the 70, west of Garden's shaft, lode 4 ft. wide, worth 16¢ per fm. In the winze sinking below the 60, lode 3 ft. wide, with stones of ore, and is looking more kindly. The engine-shaft below the 60, lode 3 ft. wide, with stones of ore, and is looking more kindly. The ground still continues good for sinking. The 40 cross-cut, south of ditto, is driving towards the middle lode. In the 40, east of ditto, lode 18 in. wide, with stones of ore. In the winze sinking below the 30, lode 20 in. wide, with good stones of ore. In the adit east of Nicholson's shaft, on middle lode, the lode is disordered by a cross branch.

**WEST WHEAL JEWEL.**—We have not taken down the lode in either of the ends on Wheal Jewel lode since our last report. Treweek's winze in the 70 fm. level, west of Williams's cross-course, on Wheal Jewel lode, lode worth 4¢ per fm. Carkeek's winze in the 70 fm. level, west of ditto, lode worth 20¢ per fm. The shallow adit level, west of Treweek's shaft, on the same lode, worth 5¢ per fm. The deep adit level, west of Treweek's shaft, on the same lode, unproductive. The 12 fm. level, west of Treweek's shaft, on the same lode, unproductive. The stopes in the back of the 12 fm. level, west of Pryor's winze, on the same lode, worth 25¢ per fm. The stopes in the bottom of the 12 fm. level, east of Treweek's shaft, on the same lode, worth 22¢ per fm. The stopes in the bottom of the same level, west of Treweek's winze, worth 24¢ per fm. These stopes are working on tribute.

**WHEAL PENHALE.**—Since my last we have been somewhat delayed in sinking the engine-shaft, owing to some breakings in the engine, all of which are now put right, and she is again working remarkably well. The shaft is now about 4½ fms. below the 30 fm. level; the ground continues much as it has been hitherto in this sink—that is, better than in any lift before sunk here. The lode in the north end 30 fm. level is very large, and yielding a fair quantity of lead. The lode in the south end, at this level, is looking very well. In the winze in the bottom of the 20 fm. level north, the lode looks much as it has been of late reported—large and productive. I have also a winze sinking in the bottom of the same level south, about 7 fms. ahead of the bottom end, and in which we have a very good lode in lead. The south end 10 fathom level is suspended. The tribute is much as last reported, but little lead having been taken down in any of the pitches. The assay of the parcel of copper ore next for sale is 7 per cent.

**WHEAL SARAH.**—Some accident has delayed the weekly report from the agent of this mine. The works are, however, proceeding with vigour, and the ends of the 30 fm. level, upon the lode, are looking well; 10 tons of silver-lead ore (5 tons from the lode, and 4 tons from the gossan) are now ready for sale, preparatory to which assays of its value for lead and silver are being made. Full particulars of the workings will be reported next week.

**WHEAL TREMAINE.**—At Laurie's shaft, in the 30 fm. level west, the lode continues, with a little tin—no lead to value. At Martin's shaft, in the 60 fm. level west, the lode is worth 6¢ per fm. In the 60 fm. level east, the lode is from 2 to 2½ ft. wide, worth 5¢ per fathom. In the 70 fm. level west, the men are employed raising to communicate with the level above, opening ground that will work on tribute. In the 70 fm. level east we are opening tribute ground; the rise in the back of this level has been communicated with the 60 fm. level. The 70 fathom level, on south branch, being very poor is suspended, and the men employed to drive a cross-cut further east to intersect the same branch, and a cross-cut is also driving in the 60 fm. level for the same purpose. At Thomas's shaft, the 50 fathom level west is still unproductive. At Fairer's shaft, in the 30 fathom level west, the lode for the last 4 or 5 fms. has been very changed, and disordered by a lode, or branch, that has crossed the end. The new shaft sinking in advance of this end is down nearly 20 fms. from surface—ground rather harder than usual. At the new shaft, in the 53 fm. level east, on Allen's branch, the lode is worth 5¢ per fm. In the 53 fm. level west, on ditto, the lode is worth 5¢ per fm. At Allen's shaft, in the 53 fm. level east, on Allen's branch, the lode is worth 7¢ per fathom. In the 53 fms. level west, on ditto, the lode is worth 5¢ per fm. In the 53 fm. level east, on a south branch, the lode is worth 4¢ per fm. In the 30 fm. level east, ditto, the lode is worth 7¢ per fathom. The boundary shaft will be completed to the 53 fathom level this week. The water has been drawn out at Wheal Margaret to the 50 fm. level, and pitches set to take away the ore ground. Our tribute department is without any alteration worthy of notice.

## FOREIGN MINES.

ALTEN MINING ASSOCIATION.—Estimated produce for March:—				
Mines.	Tons of Ore.	Per Cent.	Fine Copper.	
Raipas	38	10	3.80	
Old Mine	45	5	2.25	
United Mines	38	4	1.52	
Michael's	20	7	1.40	
Carl Johan's	6	10	0.60	
Mancus's	3	52	0.16	
Total	150		9.73	

*Mining Report from the 18th March to the 20th April.*  
Raipas.—The returns have again experienced a falling off in the quantity, having become more dreary; the quality is also somewhat deteriorated. The mining cost, however, shows a corresponding reduction, and notwithstanding the present small returns, the actual profit on the workings will undoubtedly be found to exceed that of any recent period. The prospects of this mine are still very favourable, and we hope the tributers will be more successful. The reduced per centage of last month's produce, although affected by the small returns of pills and less dredge, must be mainly attributed to an imperfect dressing, arising from the many obstacles experienced from the very stormy, snowy, and frosty weather, but as the summer advances we hope again to make better progress. We are now driving the 30 fm. level towards the large pitch under the discovery in the 11 fm. level. A thaw having set in towards the close of the month, made it rather difficult for us to return the whole of our ore, but by driving by night, when the snow has generally been frozen, we have at length been able to bring down the whole of last month's produce. The different tribute settings for the ensuing two months are shown on the accompanying list of settings.

**United Mines.**—The lode has somewhat deteriorated, in consequence of the muddiness of the ore; it is still large and regular, and yields some small returns. The new level to the eastward has latterly shown signs of improvement, and the quality of the ore appears better than that of any other part of the mine; the ground, however, is rather hard for driving, and somewhat retards the favourable progress hitherto made.

**Old Mine.**—The tribute pitches above the adit level are the quality of the ore exhausted, and in consequence the number of tributers on this part has been considerably reduced. The lode in Stung's sink develops itself favourably, with equally promising prospects; the new sink towards the north-east is also somewhat improved, but the ground is hard and difficult to drive. On the new lode, north of Bergmeister's, we have been obliged to suspend further operations until a change of weather takes place, and in consequence of a sudden and unexpected thaw having inundated the workings; we, however, hope to resume the working as soon as the ground is free from snow. The adit progress is favourably, but as yet without intersecting the lode; the other workings have undergone no change. The quality of last month's returns is below the expectations we had formed, but now the summer appears to be setting in, we hope to make better returns.

**Mancus's.**—The lode is still hard, and yields but a trifling quantity of tribute ore. No improvement can yet be noted; we expect the thaw will shortly compel us to suspend this working until next winter.

**Michael's.**—An improvement is visible in the new sink, where the lodes are still divided; they look very promising, and yield ores of a good quality. Sellen's lode continues to produce some small parcels of ore of the usual quality, but those do not increase. On the new lode the influx of snow-water has put a stop to our proceedings at present, but we hope that this untoward circumstance will be of short duration; in the meantime we employ the tributers on picking over the old stulls in the mine and the halvan heaps at the surface.

**Carl Johan's.**—The lode in the bottom of the sink continues promising and productive, but on the side nearer the surface it is not quite so large; the ore here is also less, but its quality has somewhat improved. The deterioration in the quality of the ore observed at Raipas has also been general throughout, and for the same reasons as there assigned. At the United Mines much of the poor ore has been produced from the old stulls and halvans, from which we cannot expect better returns; and for the sake of keeping the people employed until the summer, we have been obliged to carry on this work. When the summer fully sets in, we have no doubt of our operations being again attended with the usual good success. The winter roads are now breaking up very fast, and we fear that more than ordinary difficulties will hereafter be experienced in returning the produce of the mines to the smelting-house, but we must take the advantage of every favourable change in the weather for bringing down the ore, and still hope to be able to keep the smelting-house supplied. With next post I shall have the honour of handing you the usual annual results of our mining proceedings, which we have every reason to anticipate will give you satisfaction.

**KINZIGTHAL MINES.**—The following report has been received:—

*Schappach, April 27.*—I like to give you my observation and impressions from hence, whilst they are fresh, and what I have now to tell you, being the result of some 36 hours' sojourn here, could not be more so than they are. I got here yesterday about one o'clock, and at three was in the depths of the Frederick Christian, all that I saw there was most encouraging. In the 10 fm. level the winze bears every appearance of a continuous course of metallic ore, there being at present no means of getting rid of the water but by baling; the progress is slow, but there has been raised in the last few days between 3 and 4 cwt. of fine lead ore, and Martin and Raby both estimate the present appearance of the lode at 10¢ per fm.; and, as it has daily improved, we may fairly hope this is within the value. Next week a hand pump will be fixed, and the progress will be rapid. In the pump-winze they are down 36 fms., so that in 4 fms. more, which will be finished by the first week in June, the 30 fm. level will be begun; this level will drain the upper workings, and, doubtless, also make ore when sufficiently advanced westward. It will also have the advantage of being under all the old workings; and, on the whole, it is impossible to regard the condition of this mine as otherwise than most promising.

**LINARES MINES.**—The following have been received since our last:—

*Pozo Ancho, Linares, May 5.*—It will not be in my power to send you the cost-sheet till the next or following post, the work attendant on forwarding so many carts having prevented my closing up the accounts—as well as my going to Jaen. Having now forwarded 89 tons from the mine, and as it is not unlikely that the different parcels may go by different vessels, I have sent to-day the arriero to Baylen with a box of samples, which contains the following:—

1 bag comprising a sample of the first loaded—part of which is already at Seville, and the rest will, no doubt, arrive in time to ship by the first vessel, being a fair sample of.....	Arrobas	1212	or about 13½ tons.
1 bag—sample by 26 carts.....	"	1872	" 21 "
1 bag—sample by 71 carts.....	"	4916	" 54½ "
Total.....	Arrobas	8000	or about 89 tons.

I had wished to have had a sample taken, on the loading of the vessel, which should be of a decisional value, as it would refer to the ore shipped only. I find, however, that Messrs. Cahill, White, and Beck hope to load the ore from the carts as they arrive, without waiting for the carriers; and I now purpose to send a sample of each loading, as it goes from the mine with the carriers, if the quantity is at all important, and such sample will be forwarded as the case may require. I hope you will receive the above samples in good time for your sale arrangements. We shall in about 10 days more load another 43 carts, between 30 and 40 tons, or thereabout, for Seville, at 4 reals per arroba, being by part of the carrotes Mr. Shaw has forwarded. He has engaged these carts to return, and for both loadings to deliver as coal at 8 reals per quintal; which, as our wood is lessening, and the quantity of coals not very large, I shall be glad of. There is another lot of 40 carts coming, but without coals, as I have objected to any heavy deliveries of coal till we prove the comparative cheapness of the two sorts of fuel. You will please credit Messrs. Cahill, White, and Beck with 1240 reals, paid on account of ore carriage; and as they make the payments on account of carriage from time to time, I will keep you advised. I annex statement of ore weighed in and out for the past week; we are getting round the ore on the floors as quickly as possible. I enclose also Capt. Curry's monthly report, and am very gratified to tell you that our examination of the ore has been made in the most judicious manner, having found a good lode in the eastern end (worth about 4 tons to a fathom), and a very promising lode in the western end, the lead being good to within a few feet of the end; we have little doubt that a short driving further west will discover much more ore. There are valuable backs and arches standing both east and west, which we have no doubt will produce many hundred tons of lead ore, and be taken away at a low tribute; the lode appears in these backs to be generally worth from 4 to 6 tons per fm. In Wilson's shaft, the lode has been improved since my last. The tribute pitches have been made out a quantity of ore; the lode in that worked by T. Faint is worth 8 tons to a fathom. We purpose setting another pitch this week; and are only now in want of the communication, by Wilson's shaft, with the 3d level, to set several others. Altogether we are looking much better than it was in our power to report to you for the general meeting, having then seen only a small portion of the ground between the 2d and 3d levels.

To balance of lead ore as per account furnished April 28, 1850.....Arrobas 4066 20  
Weighed in for week ending May 4, 1850.....2330 15

Deduct loaded for Seville week ending May 4, 1850.....6387 9  
.....4916 0

To next account.....Remaining 1471 9  
HENRY THOMAS.

*Pozo Ancho Mine, May 4.*—The water is now drained to the 45 fm. level, and a great deal of the old workings has been examined. I am happy in being able to state that our most sanguine anticipations have been fully realised, by the appearances now visible in this level. We find the level driven about 60 fms. east of engine-shaft. A large portion of the back of this level on both sides has been taken away, from which vast quantities of mineral matter have been raised. In the end, or fore breast, there is a splendid lode that will yield 3 to 4 tons of lead per fm. This lode produces a large quantity of unwrought ground, especially in the vicinity of the fore breast, all of which shows a beautiful lode, and will produce from 3 to 4 tons per fm., which can be taken away at a low tribute, and which, we have no doubt, will give us several hundred tons of ore; this level west has been driven about the same distance from engine-shaft; the back of this level has not been worked altogether so extensively as to the east; in many places the lode has an excellent appearance—I may say there are five fine courses of lead, which will be worked at a low figure, and will produce a large quantity of ore for a long time. In the fore breast of this level the lode is large and promising, and every quantity of unwrought ground, good lode, but at present unproductive; though at a distance of a few feet only behind the end, the back shows a splendid course of ore, worth at least 4 tons to a fathom. In Wilson's shaft the lode is still good, yielding about 6 or 7 tons per fathom, for the length of the shaft; this is now down nearly 7 fms. below the 31. Shaw's shaft is sunk from 6 to 7 fms. below the 17, ground favourable and progress pretty well. St. Juan's is down about 7 fms., ground rather hard, and progress slow. Our tribute department is exactly as last month, with the exception of the raising of the level, and the raising of the 31 to the 45, tribute 2 reals the arroba. We purpose letting two other pitches in the back of the 45 fm. level, in the course of next week, each at a tribute of 2 reals the arroba, or 36¢ per ton. I think our raising will now exceed 60 tons per month. Over 100 tons have been dressed and weighed, the greater part of which is on its way, or has reached Seville, for shipment to England, and I think we have about 50 tons raised on the mine. It will now be for our attentive consideration what course is best to be pursued in watering the level, and in putting the mine in good working order, for the present and future benefit of the association. The tribute pitches have been made out a quantity of ore; and you will be informed of the course adopted in due time, but at present we are unable to state what plan is best to be adopted.—M. CURRY.

*Linares, May 6.*—I have the pleasure of informing you that I am advised of the Spanish brigantine, *Estacion*, Capt. J. Armand, A. 1, being engaged to take such portions of the ore as may arrive in time, at the low freight of 8¢ per ton, 10 per cent. prime, or 8s. 10d. per ton. This vessel goes to London, and will be in the St. Katherine docks. H. THOMAS.

## UNITED MEXICAN MINING ASSOCIATION.

*Mexico, April 12.*—MINE OF RAYAS.—With regard to the Mine of Rayas, the improvement in the workings of San Crescencio and San Cristobal, alluded to in my last letter, has continued without interruption, and, if anything, has rather extended itself than otherwise, inasmuch as the quality of rich ore is greater than the preceding month, while the thickness, though in the same quantity, shows a better level lately.

The Mine of PAXOTIC continues much in the same state of limited operation and produce, but actually promises better results.

**MINE OF ALDANA.**—I am momentarily looking for the communication being effected between the interior cross-cut and the shaft, which will materially lessen expenses and add ventilation, so much required. The vein also should be reached by the shaft in the course of next month, when the ostensible character of this undertaking will be developed and fairly tested.











## NOTICES TO CORRESPONDENTS.

\* We must impress upon our correspondents, the necessity of invariably furnishing us with their names and addresses—not that their communications should, consequently, be noticed, but as an earnest to us of their good faith.

**SOUTHERN SPRINGS.**—Sir: Will you oblige by giving place to this observation, and the rejoinders thereto?—G. S.: The cause of springs rising before much rain? For instance, on the 1st inst. a spring was pumped out, and on the 3d inst. it had risen 6 inches above the level of the 1st. —G. T. W.: *Survey, May 8.*

**H. J. (Dudley).**—The old ale gallon contained 282 cubic inches, and the old wine gallon 231 inches; but the last Act of Parliament, which assimilated all our liquid measures under the standard called the "Imperial gallon," fixed its capacity at 277.274 in.

**IMPROVEMENTS IN THE WIRE-ROPE.**—In our notice of this invention in last week's Journal, the patentee is erroneously named as "James Buck;" it should have been, "James Buck Wilson" (of the Haydock Wire-Rope Works, Newton-le-Willows). Mr. Wilson writes to us to correct this mistake, and adds that the grand object of his invention is to manufacture flat wire-ropes, without stitching or sewing together a number of strands, so that the rope will not break, and the wire-ropes cannot fail to interest our readers, we trust Mr. Wilson will enable us to lay a more detailed statement before them in our next.

**G. S. C. E. (London).**—The communication of our correspondent does not in our opinion contain any remarks of sufficient importance to warrant its insertion. We cannot be surprised at the letter received from the secretary of the South Western Railway, stating that his suggestions could not be received; for it would be necessary for a special committee of directors to be always sitting, if they once notified that they were prepared to listen to all who had suggestions of improvements to offer. We have before inserted communications from "G. S." on his improved railway management, but even then considered his suggestions and plans entirely wrong. His present letter is, if anything, still more crude and far-fetched, and the results he arrives at are, in our view, erroneous. "G. S.'s" suggestions will never reduce expenses from 2s. 4d. to 8d. or 10d. per mile, even supposing it practicable to carry them out, which we deny.

**A Friend (Colchester).**—West Wheal Jewel may certainly be said to have nearly paid its way in the past year, as the difference between the cost and returns is only about 40%; still it must be remembered that the tin lode has, in a great measure, been the support of the mine, and that for some months the reserves of ore have been diminishing. The cutting Tolcarne lode in the 57 fm. level is looked forward to with much interest, and considerable expectations are entertained of the proposed operations in the north ground. We refer our correspondent to the report, in another column, of the proceedings at the annual meeting, held on Monday last.

**M. (Neath).**—We will make enquiries, and give some information in a week or two.

**A Reader (Bakewell).**—Enquire of Mr. Button, chemist, Holborn, who will forward you a list.

**THE COAL-BOOK SYSTEM.**—"An Adventurer" (City).—The Vice-Warden, at the late sittings of the Stannaries Court, in giving judgment in the case "Richards v. Cleave," said—"If a person proposed to form a company, and the full number of shares were not taken up, the then shareholders, if they went to work, must pay all losses and receive all profits, according to their shares—not according to their interests as they would have been, had the full number of shares been taken, but as they actually existed. Say, an adventure was proposed to consist of 100 shares when complete, and that ten shares were taken by three persons in unequal numbers, and these agreed to work the mine, they were then, in fact and in law, the only adventurers, and must pay all expenses and receive all profits; and as between themselves, in account, they would pay and receive according to their shares."

**THE ELECTRIC TELEGRAPH.**—Sir: Being called upon to give some correct and impartial account on electric telegraphs for the use of a foreign engineer, I know of no better authority than your estimable Journal, and I avail myself of your usual kindness in enlightening your correspondents, to request you to inform me, in one of your earliest Numbers, which is the best system to adopt for telegraphic communications, whether the electro-magnetic first introduced by Wheatstone and Cooke, or the later suggested by Bain, in which the electric current is produced by chemical means? The proposed line is on a railroad, and intended points are not only between two distant points, but also for the service of intermediate stations. If you could point out the comparative advantages of both systems, in point of efficiency, infallibility, velocity, power, and economy, you would render a good service to your readers. It is well you should know that Bain's process has been lately puffed up in certain foreign newspapers, and some ridiculously exaggerated statements have been made concerning its value, with the view of depreciating the other plan generally adopted in this country. Scientific and practical men, however, are far from placing their confidence in "advertising" prospectuses, and they look to this country, where experience is joined to skill, for impartial information and guidance.—A. A.: *London, May 14.*

[Some remarks in reply to the enquiries of our correspondent will be found in another part of our Journal.]

**J. C. (Cheltenham).**—We could not learn of any transaction having taken place while the price remained stationary—the alteration was occasioned by a *bona fide* sale.

**Engineer of the Next Generation.**—We have received a long communication on the subject of the diagrams in our correspondent's letter in the *Mining Journal* of the 20th April last—the insertion of which would not, in our opinion, tend in the slightest degree to a settlement of the point at issue. After a long series of calculations, our correspondent insists that he has justified his former published conclusions, and considers that, instead of an under suspension-bridge, the title of the plan proposed should be "Mottley's Bridge to Kingdom Come." The writer cannot see what his name has to do with the subject: his object was not to take away the good name of any one, and he conceives that in throwing out a few hints which it was thought would be acceptable to some parties, they would be as well received without as with the name.

**J. W. W. (Glasgow).**—The only work established in Norway for the manufacture of chromate of potash is situated at Leer-fos, about 3 miles north of the city of Drøenheim. About 330 tons of chromate of iron are annually used there, which cost about 21. 5s. per ton, delivered at the works. In retreating this about 62 tons of munda, 1566 cwt. of different sorts of potash, 5900 lbs. of saltpetre, 750 fathoms of wood, 110 loads of turf, 870 tons of coals, are consumed. The production is generally about 182,000 lbs. chromate of potash, and the profits of the establishment, which is the property of a Norwegian company, about 10000 sterling per annum.

**F. E. (Broad-street).**—The Mine of Channucille from which silver to the value of many hundred thousand pounds has been raised in the course of a few years, was discovered by a man who threw a stone at his loaded donkey, and thinking that it was very heavy, picked it up, and found it full of native silver. The vein occurred at no great distance, standing up like a wedge of pure metal.

**N. (Derby).**—Address the secretary, at the offices, Cornhill.

The communication of "A Paid Railway Official" on Iron for Railway Purposes, shall appear in our next Journal; also the letter on the Constitution of Wheal Samson Consols Adventure; "Philo-Paul" on W—; and several others.

\* It is particularly requested that all communications may be addressed—  
TO THE EDITOR,  
Mining Journal Office,  
26, FLEET-STREET, LONDON.

And Post-office orders made payable to Wm. Salmon Mansell, as acting for the proprietors.

## THE MINING JOURNAL

Railway and Commercial Gazette.

LONDON, MAY 18, 1850.

The MINING JOURNAL is published at about Eleven o'clock on Saturday morning, at the office, 26, Fleet-street, and can be obtained, before Twelve, of all news agents, at the Royal Exchange, and other parts of London.

Since our remarks on the Scotch iron and coal trades, in last week's MINING JOURNAL, three of the London papers, the *Times*, *Morning Chronicle*, and *Daily News*, singularly enough, on one morning appeared with articles on the same subject, and although somewhat differently worded, breathe precisely the same spirit; but from some inaccuracies in the statements, and, indeed, their general tenor, we have too much reason to fear they have been forwarded from interested motives. The general bearing of these articles are to the great difference at present existing between the trade in Wales and Staffordshire, and in Scotland. It is said that sales are taking place in Wales at lower rates than have been known since 1843; but in Scotland, it is stated that, although the stocks are estimated at 300,000 tons, the decline is not so severe, owing to the facilities afforded by the Glasgow banks, by whom advances are represented to be made readily to speculators on what is termed "makers' scrip," which promises the delivery of a certain number of tons when required, the amount of such advance often reaching to within a few shillings per ton of the actual market value. These notes pass from hand to hand, and often remain in circulation for a year or two.

Now, from information received by us, from a source on which we can unhesitatingly rely, the make of last year was 680,000 tons, the exports 374,431 tons, thus leaving for home consumption 305,569 tons. The present year commenced with an estimated stock of 194,000 tons, to which add for home consumption and storage 100,000 tons, gives 294,000, from which, if we deduct 70,056, the quantity sold in four months to May 1st, we have 223,944 for the present stocks. These calculations are made on the estimation that the make and sales have gone on in the past few months the same as in the corresponding period of 1849; but as there has been an increase in the exports in the first four months of 1850, as compared with the former year, of 42,606 tons, we take it the above 223,944 tons, as present stock, is considerably above the mark. With respect to the imputations that the bankers lend themselves to the bolstering up spurious quotations in trade, by supporting the makers' scrip system, the *Glasgow Daily Mail* truly states that, if bankers be requested to discount bills, they will not refuse additional security; even Lombard-street would not be over scrupulous in this respect. It appears to us clear that if, as has been stated, 300,000 worth of this scrip is afloat in the Scotch market, and that the stock of iron is 300,000 tons, representing a capital of nearly 700,000, the iron makers cannot be charged with having promised to deliver metal which they have still to dig for and convert; or, that the bankers have run

any more than the usual risks. We have nothing new to communicate respecting the strike; the men still stand out, although we have heard that in some solitary instances the sale masters have given 4s. per day. It is still determined to adhere to the resolution which we noticed last week, of blowing out one-third of the furnaces for two months, which resolution is being carried out; and for further information we refer to a letter in another column, under the signature of "Subscriber," on the iron trade.

In attempting, for the satisfaction of our readers interested in Asturian shares, and others similarly situated, to define the liabilities of the holders of such shares, we cannot profess to speak *ex cathedra*. The discrepancies of the law of partnership, as now applied to public companies, and the peculiarity of the facts of each case, which furnishes to the deciding authority the excuse of hair-splitting, to establish distinctions the most puzzling to lay comprehensions, must plead hereafter our apology, in the event of an adjudication contradictory to our present opinions. The proverbial fallibility of our legal guides has been peculiarly conspicuous since the year 1845, on the doctrine of responsibility connected with joint-stock associations, and justifies us in thus far guarding our correspondents against an implicit reliance on our dicta, where a state of facts exist, at variance, even slightly, from that which we are about to premise.

The condition of the company, here taken as the type of those which, prior to the passing of the Joint-Stock Companies' Act (7th and 8th Vic., c. 110), were popular on the Stock Exchange, under the denomination of "scrip companies" (and of which not a few availed themselves of the statutory exemption from "complete registration"), may be summed up as follows. Having published the prospectus of their scheme, and allotted shares, the promoters contrive, by fair means or foul, to form a proprietary. The interest in the shares, which represent a sufficient capital, is partitioned into two classes, registered and unregistered—the former constituted those of which the holders had enough of confidence, or temerity, to incur the risk of being sued for the debts in case of failure; and the latter, of the shares of those who imagined that mere possession could not be construed as evidence of partnership. Collaterally with the formation of the company here, a constitution as an anonymous association was obtained for it in a foreign country, which was supposed to endow it with certain attributes, making it exceptional from those subjected solely to British law. Nevertheless, the best opinions concur in the view that, with respect to the administration of the principles of foreign law, the English courts have no direct jurisdiction; and that the responsibility of British proprietors of shares is strictly limited to contracts entered into by them, or on their behalf by the executive of the company, within the jurisdiction of the British courts, and consistently with British law; therefore, we may totally dismiss the consideration of any supposed peculiarity arising from the field of operations being in a foreign land, and under foreign legislation.

The next fact of importance is, that nothing in the shape of a deed, as we understand the term in conveyancing here, was executed, so as to bind the scrip-holders prior to the issue of shares, as usual in other companies established in a legitimate manner; but the statutes, or articles of constitution, necessary to obtain the sanction of the foreign authorities, were drawn up and subscribed by certain parties, who were, ordinarily, self-constituted directors and shareholders. This Act was duly registered abroad; it was publicly known to exist, and no doubt, the contents were accessible to the shareholders. Now, although this document may be no deed, it is sufficient to supply evidence of the conditions of the partnership implied by the acceptance of shares; so is the prospectus, and so is the form of the share certificate; with this reserve, that whatever condition may be repugnant to English law is void, and all others equitably, if not legally, sufficient to affect the partners, and control the proceedings of the company.

Had the operations of the company been merely ephemeral, questions might here be raised as to whether the promoters should bear the onus of expenditure or not. But in this case there is an essential ingredient, which supercedes, as between creditors and the individual partners, any discussion of the kind—viz.: the business of the company was carried on ostensibly, at least, with perfect *bona fides*, and that, too, with the assent, express, or implied, of the shareholders. We have not any of the documents to refer to, as explaining the measure of that assent; but well do we recollect the cajoling promises and assertions of peremptory necessity by which it was secured, as well as the faltering and declining confidence on the part of the shareholders, manifested at each application for an instalment of the capital—the prompt payment of which generally constitutes the best and simplest evidence of public approbation. Having progressed, as schemes badly conceived, or unskillfully, or irregularly conducted, usually do, to a state of difficulty and debt, the proceedings are brought to a standstill; it is immaterial how. Whether it be through insolvency, dissolution (as by the Spanish decree which affects the Asturian Company), or any other cause, which furnishes a motive for the abandonment of schemes, the company's affairs are destined to be wound up; and the first inquiry is, simply, who is there to pay the debts? The answer is equally simple—the shareholders. All matters of account between the direction and their co-partners—all questions of fraud, mismanagement, and delinquency of every description—will be foreign to the consideration of the demand of a fair creditor. Although both classes of shareholders are in the eye of the law alike answerable, as we assert, for the debts of the company, yet it is probable that a claimant would prefer to sue a party who is a registered shareholder, or a director, in consequence of the uncertainty of obtaining sufficient proof against the unregistered; and on that account the case will infallibly pass into the Court of Chancery, for the protection of the former. Once there, no technicality will exclude the evidence necessary to congregate all those in the remotest degree responsible to swell the list of contributors. We, therefore, pass to the consideration of the mode in which that list will be framed.

First, we may be permitted to state whom it is that the MASTER will exclude, according to the precedents. The original allottees, who have never been recognised as partners, by reason of the usual forfeiture of the title to shares given by their letters of allotment, and holders of forfeited shares, where the forfeiture has been declared legally and without collusion, and acquiesced in, seem to be exempted from the authority of BERESFORD's case, in *re KOLLMAN's Company*, decided on appeal by VICE-CHANCELLOR KNIGHT BRUCE on the 21st of last February, the MASTER having ruled otherwise. We presume that this decision applies particularly to cases like the present, where no special contract, extending personal liability beyond forfeiture, subsists. Where there is a deed there is most frequently a covenant to pay the calls; and if the conditions of transfer impose the obligations of the deed, it might be argued that a personal remedy was, by virtue of the covenant, superadded to the penalty of forfeiture, so as to charge both a holder, who had executed the deed, and a transferee. But in companies established on such irregular bases, as formerly were those scrip companies, we think that no such contract will be found to exist; and the rule in *BERESFORD's case* must, therefore, prevail, with its full force in their regard.

No precedent need be cited to warrant us in classing with the exempt parties to whom shares may have been sold, or assigned, but who have never compromised themselves by any act which implies acceptance. This ground of exception is too well defined to admit a doubt; and we do not think there is any other to enumerate, save that of mere agency, well avowed at the period of performing any duty connected with the shares, and indisputably proved. To this we shall advert in our next article on the subject, in describing the materials from which the contribution list will be constructed.

Since the foregoing was put in type, we notice, by the reports of the proceedings before the MASTER, in *re KOLLMAN's Company*, that certain holders of forfeited shares have been added to the list of contributors. As in *BERESFORD's case* the deed had not been executed, we assume that the parties now rendered liable, though previously exempted, have executed some covenant distinguishing their position from that of Mr. BERESFORD.

It was certainly our full hope and expectation that before this advanced period of the Parliamentary session, some well-considered measure would have been submitted to the popular branch of the Legislature, for the greater purification of mines, and for the more perfect protection of the working miner from those fatal casualties which wait upon his perilous occupation. We may conclude that the hands of Government are, as a rule, quite full, and that, considering the forms of the House, the cross play of parties, and the weight and complexity of those national measures demanding their official attention, they would not be likely to undertake the carry-

ing through Parliament of a difficult measure, such as this as to the better regulation of mines confessedly is, without that degree of pressure and urgency from without, which those who are interested in this subject have never yet infused into it. We believe that the greatest reason which can be alleged why a measure adapted to the evil complained of is not now in its passage through Parliament is, that it has not been sufficiently and steadily pressed upon the attention of Government.

It is not sufficient that a well-meaning deputation waits upon Ministers, communicating its own opinion and requesting theirs. It was a case less for being gentle than for being earnest; less for being meek than for being importunate—it was, in fact, an occasion on which, by the force of its reasoning, and the fervour of its invocation, the deputation should have set itself the task of winning the ministerial mind. As it is, we fear they heard little to inform or to quicken them; and this important and essential measure, considering that the session is so far advanced as that Parliament is entering upon its Witsundide holidays, will be thrown over, it is to be feared, till another year. This Journal has not been remiss in presenting the subject with sufficient frequency, both to Parliament and the public; and we can now do no more than earnestly commend the working miners of the kingdom to the forecasting care of the masters, whose duty it is, as those who must give an account, to do their utmost for the safety and the happiness of those who serve them.

A correspondent, whose communication will be found in another part of our columns, desires to be furnished with information as to the best system of electro-telegraphy at present in use. If the object sought is merely a colloquial telegraph, then we have no hesitation in saying that the very best system which has yet been brought before the public, both for general efficiency of action and for economy of construction, is that of Messrs. BRETT and LITTLE, to which we have so frequently directed the attention of our readers. If our correspondent, however, wishes for information upon the subject of a recording telegraph, we must refer him to the beautiful and accurate inventions which are now in the joint possession of Messrs. BRETT, HOUSE, and WILLMER, and which constitute the intended basis of operations with the "EUROPEAN AND AMERICAN PRINTING ELECTRIC TELEGRAPH COMPANY." We had occasion, in our last Number, to discuss at some length the progress and the ultimate result of the recent trial in the Court of Queen's Bench—"THE ELECTRIC TELEGRAPH COMPANY v. WILLMER and SMITH;" and we may now observe that the signal victory gained by the defendants upon that occasion does not appear very likely to be thrown away. On the contrary, we are given to understand, that it is now being followed up with all the ardour and promptitude of good generalship; and that the public are likely, through the strenuous efforts which are now making, to be shortly in possession of a far cheaper and more efficient system of instantaneous communication than has yet been placed at their disposal. The new company, with which Messrs. WILLMER and SMITH are connected, are seeking, by every means in their power, to place the printing telegraph within the reach of all classes of the community, by following out the system of the penny post; and their efforts, if successful, will undoubtedly lead to a great accession of business, as in the case of the postal system itself. The number of letters which, under the old system, passed through the Post-Office, in 1839, was 76,000,000; while the number for the past year was upwards of 337,000,000. With regard to the very high charges levied by the present company for the transmission of news along their lines of wire, it should not be lost sight of that every public despatch, every private message which passes through their hands, is subject, of necessity, to a certain amount of indirect taxation, in order to cover the expenses of that frightful, and apparently interminable, system of litigation into which the directors, for reasons best known to themselves, have thought fit to involve those interested.

If the object of all this lavish expenditure is merely to patch up the broken crutch of a continued and exclusive monopoly in the interchange of thought and intelligence among the members of a mighty empire, we feel assured that the day is gone by for any such infliction as this to be quietly submitted to by a mass of intelligent men, and that all money so expended is utterly lost to the true purposes of genuine industry and social advancement. But we are reverting to a theme which has already carried us to a great length on previous occasions. Our correspondent, in discussing the relative merits of different telegraphic inventions, observes—"It is well you should know that BAIN's process has been lately puffed up in certain foreign newspapers, and some ridiculously exaggerated statements have been made concerning its value, with the view of depreciating the other plan generally adopted in this country." This is nothing new. Judging from the newspapers which have reached us on various occasions, the same system of puffing, with regard to this invention, has been carried on in America; and, after all, though bearing the name of Mr. BAIN as that of the exclusive inventor, it is, in its chemical and electrical principles, but the appropriated inventions of two previous patentees of 1839 and 1841. Our correspondent is perfectly correct in looking with a suspicious eye upon all such "advertising prospectuses" as those he refers to. In addition to the telegraphs we have already named as deserving his particular attention, it is only right to mention the improved instruments of the Messrs. HEIGTON. These latter will be employed, more or less, upon the lines of the British Telegraph Company.

It is but rarely that we step aside from the ordinary path of our duties to notice the events which are daily springing into life in the world of politics; but the recent alteration between the Ionian Parliament and the LORD HIGH COMMISSIONER of the islands is of so novel and remarkable a description, that a word or two on the subject will probably interest some of our readers. The new Parliament of the little republic in question had scarcely got well into session before they began to illuminate and to lecture not only the representative of the Crown, but even the Crown itself, on the great subjects of policy and administration. They asked for a radical reform. In what things, and to what extent, as far as any specification on their part went, they were wholly silent. They claimed for the Ionian people a larger participation in the official Government of the islands, without considering the disqualification in ignorance in which the Ionians continue, almost to a man, of those constitutional principles upon which all orderly and successful government is founded; and they required also that their commerce, which is now drooping and exhausted, shall be revived and invigorated by the wisdom and exertions of the Imperial Government—the Ionians themselves having, as is notorious, by their inferior seamanship, and the uneconomical management of their merchant navy, relinquished much of the carrying trade of the Levant to the flags of Naples and Sardinia. This was a tolerable necklace of claims to adorn the bust of the LORD HIGH COMMISSIONER with as his first meeting with the Ionian Parliament, and confirms, rather than otherwise, what we have read in a recent pamphlet on the colonies—namely: that the Ionians have been called up about a generation too soon into the class of representative states; that they are not able to so much as appreciate the duties of their new position; and that so far from being thankful for the amelioration of their political status by the interposition of Great Britain, they murmur and conspire, because the change has not turned out to be more complete and wonderful than it has or could have been. But the crowning curiosity of the case is this—that these islanders, who are now asking to be members of a Panhellenic empire, and to have more done for them than those who have been born and cradled in the bosom of free institutions, were, as yesterday, perfect strangers to the most elementary and rudimentary forms of liberty of any people known within the circle of the Commonwealth of Europe. Her MAJESTY's Commissioner has given to these murmurers a smart and a reproving answer in one of the most spirited and able public documents which it has ever been our good fortune to peruse; and we trust the Ionian Parliament and people will profit by the lesson read them, and each betaking themselves to their proper spheres of duty and of diligence, make the task of Government less onerous than, wanting these habits on the part of the governed, it and for ever necessarily must be.

THE PORT LAUREATE.—The *Morning Post* suggests that Thomas Miller the basketmaker poet, ought to succeed to the vacant laureateship, inasmuch as his poems are equal in quality to those of any living author, and that his prose works, which breathe in every line the spirit of poetry, are more numerous. It would be a graceful compliment (says the *Post*) to that class of society, for the improvement of which the Royal Society has so often exhibited an earnest solicitation, if her Majesty were to confer, for the first time since the office was established, its honours and emoluments upon one of so humble an origin.



## GOLD MINES OF THE Isthmus of Darien—EMIGRATION TO NEW GRANADA—CANALIZATION OF THE Isthmus of Darien.

TO THE EDITOR OF THE DAILY NEWS.

Sir,—On my return from California to Panama, in the beginning of last Dec., I made an excursion into the forests of the Isthmus of Panama, and found that gold was to be obtained by washing the earth on the sides of the mountains, on the banks of the streams, and in the crevices between the ledges of rock in their beds, disseminated precisely in the same manner as in California. Immediately after this excursion I proceeded to the Isthmus of Darien, going down the Bay of Panama to the Gulf of San Miguel, and ascending the River Tuira, or San Maria, to Yavisa, the capital of the territory, and to Malinca, which latter I made my starting point in my researches for gold mines. Proceeding from thence through the forest with a guide and four clearers (Indians), I picked and dug in various places, and found that gold was abundant in the streams, and that the quartz rocks were exceedingly rich in that metal. In the course of my journey I dug out of the various spots I tried upwards of 3 lbs. of gold, 22 carats fine. Some of this I showed to Colonel Addison, Metropolitan Counties Life Assurance Company, Regent-street; Mr. Williams, Albion Chambers, Adam-street, Adelphi; and Mr. Bauer, Bullion-dealer, Leadenhall-st. Mining had been carried on in the Isthmus of Darien by the old Spaniards; and I have read in the archives of the Treasury of Panama the accounts for a number of years of the same transmitted to Spain for the king's revenue, or 5 per cent. (the quinto, or fifth, having been, at an early period, reduced to the twentieth), from the single mine of Cana, the Mina Real in the Cerro del Espíritu Santo, at Santa Cruz de Cana; and these sums averaged upwards of 2½ millions of dollars per annum, giving upwards of 70 millions per annum for the produce. This was a prodigious return, especially considering that there never could have been more than 300 or 400 negro slaves mining, and thrown completely into the shade the gold-digging operations in California, where, from so vast a territory, the return is under a million of dollars per month, although there must be more than 100,000 Americans, Mexicans, Chilians, &c., digging. All mining operations in Darien were stopped, and the mines closed up, by a decree of the King of Spain, dated the 12th March, 1685, in consequence of the repeated incursions of the buccanniers, and the interruption the commerce of the Spaniards suffered from the vessels of the buccanniers cruising in the Gulf of Darien. Since that period they were never re-opened; and I intend to return to Darien with a company of miners, to re-open the mine of Cana. Whilst in the territory of Darien, I took the necessary steps for obtaining a grant of a mine, and applied for the River Uruti, the mountains on whose banks are highly auriferous, and I shall receive my title by next mail from Bogota.

I deem it of importance that the public should be informed of the great advantages the government of New Granada affords to immigrants. I received from the government, for which I expect, by next mail, full powers to forward out an extensive emigration, their laws on the subject of immigration, the substance of which is as follows:—3,000,000 of fanegadas of land are at the disposal of the republic for distribution in grants to settlers. Every immigrant desirous of settling in New Granada shall receive a grant of 10 fanegadas of land (100,000 square yards, of 8 decimetres the yard), and a proportionate grant for each child. All immigrants shall be received at their port of embarkation by an agent of the republic, who will forward them to their destination; and should they be without means, he will defray their expenses until they are landed, or give for each adult \$30, and \$20 for each child. The immigrants shall choose their lands for themselves, or the Government land surveyor shall select their locations for them. Immigrants shall be employed in any Government works in the vicinity of their locations, in preference to any other labourers. Any immigrant having all, or three-fourths of the land, granted to him under cultivation, shall, on application, receive new grants of land, or a loan of \$200, to be repaid without interest, by instalments, in four years.

All immigrants, immediately on their arrival in New Granada, shall be naturalized as citizens of the republic, and enjoy all the rights of New Granadians. They shall be exempt for 20 years from military service and from enrolment in the national guard, from all ecclesiastical contribution, and from all taxation. They shall enjoy perfect freedom of religion. All persons forwarding out emigrants at their own expense, shall receive \$50 for each male upwards of 16 years of age, and \$25 for each woman or child immediately on their location on the lands of the republic.

The lands set apart for colonisation, by the republic, consist of the elevated table-lands, and elevated valleys of the Cordillera of the Andes, where, on account of the temperate climate (Bogota, the capital, being 8100 feet above the sea level), the climate is temperate, a perpetual spring, the range of the thermometer being from 50 to 80 all the year round. On these lands wheat will grow, and in the low valleys sugar-cane, coffee, and all the productions of the tropics, the immigrant having his choice of climate, from the tropical heat of the valleys to the perpetual snows of the higher ranges of the mountain: so that the same man may have fields of wheat, leguminous plants, potatoes, and other productions of temperate climates, and be also a coffee and sugar planter. The land requires very little labour, being rich virgin soil, and all Savannah, or free from forest, with the exception of a few portions covered with copse or light timber, which requires little more than burning to prepare it for cultivation. Towns and villages are scattered over the country, forming so many points d'appui for the purposes of supplies, and internal and external communication. The people are old Creole Spaniards, and the mixed races of Spaniards, Indians, and negroes. In the habitable globe, no country is so desirable, or affords such inducements to the colonists. In 1847, the Government of Venezuela, which I travelled in 1841 and 1842, sent me proposals for an Irish emigration, but my absence at the time prevented my taking any steps in the matter. Their laws on emigration are similar to those of New Granada, and equally merit attention.

On my return from the interior of the territory of Darien, I ascended the Chiquanaqua and Savana rivers. These rivers, but particularly the latter, afford the most direct and feasible communication between the Atlantic and Pacific Oceans. I ascended the Rio Savana as high as the ruins of the old Spanish Fort of Fuerte del Principe, about 30 miles above its mouth. The first 10 miles are navigable for the largest ships, and there would only remain to deepen about 20 miles, and to cut from Fuerte del Principe to the Atlantic, a distance of less than 10 miles. From the top of a tree, on the summit of a mountain on the Rio Lara, I had a fine view of both the Atlantic and Pacific. No bar exists at the mouth of the Rio Savana, nor is there any difficulty in the navigation of the Gulf of San Miguel, nor on the coast on the Atlantic side. This river presents facilities which render it incomparably more eligible for intermaritime communication than either the Lake of Nicaragua, the River Chiriqui, or the Atreto.

EDWARD CULLEN, M.D.  
Upper Dominick-street, Dublin, April, 1850.

**THE SALT TRADE—CONTEMPLATED MONOPOLY.**—We regret to find that a move is making to buy up a number of the makers to stop their works, and thus increase the price in Cheshire, and allow the others to monopolise the trade; the recommendation is as mean and despicable as it is against the spirit of the age, and we hope the proposer may meet with the obloquy he deserves. Fair competition is now the order of the day. A statement, addressed to the salt proprietors of Cheshire, signed "A Well-wisher" (Albion), has been forwarded us, which states that year after year salt is selling at ruinous prices, owing to the make being greater than the demand; that the most feasible plan to obviate the evil would be to purchase—say, one-fourth of the makers who would stop their works, pay them 1s. 6d. per ton on all manufactured, and allow them a fair rate of interest for the use of their flats. He states the make to be 740,000 tons annually, the exports amount to 630,000 tons, and he recommends that the make should be curtailed to the extent of at least 100,000 tons; instead of 110,000 tons for home consumption, as by his own showing we have at present, this Solon in monopoly would give 10,000 tons to the vast population of this kingdom, to be contended for by merchants, agriculturists, &c., of course, greatly enhancing the price. But even here the evil would defeat itself, for the demand would be so much greater than the supply, that the old system of evaporation of sea water could be successfully brought into competition against the pits, until the price was again reduced. Such is the end of all monopoly; it destroys itself by its exactions, not, however, without doing incalculable injury, and unsettling trade and commerce. So important an article as salt, to the public health and welfare, must, at least, be left to take its course.

**EAST WHEEL SHEPHERDS.**—In the Stannaries Court an action was tried to recover the sum of 168l. 9s., alleged to be due on account of goods supplied and money advanced for the use of the mine, in which Mrs. Sarah Hocking, the widow and administratrix of Mr. R. Ivey Hocking, late of Truro, was plaintiff, and Mr. Richard Clymo, the agent of the mine, was defendant. The evidence as to the state of accounts between the parties was of great length, but unimportant to the public. A principal point raised was, whether a Mr. Gray, an adventurer, should be admitted as evidence for the defendant. The Vice-Warden decided that, as an adventurer, such person's money or property was sought to be recovered by plaintiff, he could not be admitted as a witness, and his evidence must be struck out. Mr. Stokes contended that plaintiff had proved a debt of 50l. The Vice-Warden, in giving judgement, said it appeared that Mr. Hocking never made any claim in his lifetime, and not having done so, and his widow not being properly acquainted with the particular circumstances, he rather decided the case on the ground that the intestate never credited the mine, or waived all claim, than on the ground of any unfair proceeding. Had plaintiff been living, the evidence justified an imputation of unfair concealment, but that was no imputation against the widow. The petition must be dismissed with costs, and although he could, under the circumstances, have wished to have exempted her from the latter, he did not feel it in his power to do so.

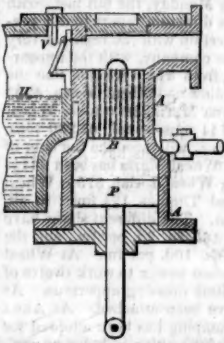
**RIGHT OF MINING CREDITORS TO INSPECT THE COST-BOOK.**—In the Stannaries Court, Mr. James Richards presented a petition, praying for an amended account between the adventurers in Wheal Queen, an abandoned adventure. The case had been before the Registrar, who had reported in favour of the addition of Capt. Woolcock to the contributors. Mr. Hockin now argued against his being an adventurer, and submitted that the case having been already before the court, and the parties by their answer having admitted that they only were liable, it was too late to take an exception before the Registrar. Counsel on the other side proved that he had been heard to say that he was an adventurer. The Vice-Warden said he found the sum, rated 2l. 18s. 4d. per share, amounted to sixteen guineas less than the required amount, and this sixteen guineas was exactly the amount of Captain Woolcock's salary up to the time. He did not think the case ought to have come before him, but he would defer his decision, hoping that in the interim a compromise might be effected. Such, however, was not the case; and when judgement was given, the Vice-Warden said that mining creditors, who are interested to know the names of those persons to whom they have given credit, may on application to the pursor, or on his refusal, to that court—indeed, they had a right to inspect so much of the cost-book as contains the names of the adventurers; therefore, the name of an adventurer was for the benefit of strangers as creditors, as well as it was, certainly, for the benefit of the co-adventurers altogether. This being so, a known connected party entering themselves as blank would do wrong, unless by so doing he undertook to be responsible for every payment between himself and his co-adventurers which their specified shares did not cover. After some further remarks, he adjudged Capt. Robert Woolcock to have been a joint owner of Wheal Queen, with Mr. R. Ivey Hocking. He considered the Registrar's report well founded, and that he could not take an account without the presence, or privity, of Capt. Woolcock, or his representative.

## SIEMENS'S REGENERATIVE CONDENSER.

We have elsewhere referred to a paper read at the Society of Arts on a new condenser, patented by Mr. Siemens, by which great advantages are considered to be obtained over any others hitherto in use.

In the introductory portion of the paper, Mr. Siemens briefly states the objects for which a condenser is applied, and traces its history of gradual improvement by Newcomen, Watt, Hornblower, and Hall, to the present day. There are two distinct classes of condensers—the injective condenser by Watt, which is the one universally adopted, and the surface condenser, which was first proposed by Hornblower, and improved upon by Hall and others. An efficient surface or dry condenser would possess considerable advantages over the injective condenser, because it allows the condensed water continually to be returned to the boiler, and, consequently, prevents incrustation of the boiler, with all the evils resulting therefrom. The surface condenser patented was one by Mr. S. B. Hall, which caused considerable attention in the scientific world. It consisted of two chests, containing a number of tubes, into which the steam was admitted, and by the alternate surrounding the tubes with cold water, immediate condensation was effected. Notwithstanding this description of condenser was highly ingenious, there were disadvantages connected with it which were insurmountable in practice. All those, indeed, hitherto proposed have failed, in consequence of their extreme complexity and weight, but more especially from their liability to derangement, through the deposition of calcareous and greasy substance upon the condensing surfaces, which it has been found impossible to remove, without taking the whole fabric to pieces. The surface condenser of Mr. Siemens is remarkable for its simplicity and lightness, and for the easy access which it affords for the purpose of cleaning. It consists of a series of copper plates  $\frac{3}{8}$  in. thick,  $\frac{1}{2}$  in. broad, and 2 ft. long each, which are piled together with two longitudinal flattened wires, of the same metal as the adjacent plates, and the whole pile screwed up tightly together between the sides of a rectangular closed vessel, which constitute the body of the condenser. The ends of the plates project through the top and bottom of the vessel, and are made flush with its exterior surfaces; after which a ring of India-rubber is laid on, which is screwed down with a bonnet. The flattened wires between the plates stand about 3 in. apart, and form with them a large number of narrow passages, through which the cold condensed water flows in an upward direction; while their outer edges project into the vacuum space of the condenser, and form the condensing surfaces. The arrangement of the metallic plates is such, that the extent of surface in contact with the condensing steam, the distance through which the heat travels in the metal, and the extent of surface in contact with the surrounding water, are in precise proportion to the relative rapidity with which these distinct operations are performed, and, consequently, the greatest economy of material is obtained.

Encouraged by the success of this condenser, Mr. Siemens has directed his attention to the achievement of a still more important object, which is to condense the steam in such a manner, that the condensing water issues into the hot well at boiling heat, and yet produces an efficient vacuum within the working cylinder. This appears paradoxical at first sight, yet it has been successfully accomplished by a perfectly new principle, called by Mr. Siemens the "Regenerative Principle of Condensation."



The regenerative condenser, as applied to a high-pressure engine, consists of an upright rectangular trunk, A, of cast-iron, the lower end whereof assumes the form of a cylinder, and contains a working piston, P. The trunk itself contains a set of copper or brass plates, B, which are placed upright and parallel to each other, of intervening spaces of the same breadth as the plates themselves, or between one-twelfth and one-sixteenth part of an inch. The upper extremity of the condenser communicates on one side to the exhaust part of the engine, and on the other to a hot well, H, through an uncovering valve, V. The plates, B, are fastened together by thin bolts, with small washers between the adjacent plates, which keep them the required distance apart. Immediately below the plates, a cold water jet enters the condenser.

The action of this condenser is as follows:—Motion is imparted to the piston, P, by the engine causing it to effect two strokes for every one of the engine. At the moment when the exhaust port of the engine opens, the plates, B, are completely immersed in water, a small portion of which has entered the passage above the plates, and is, together with the air present, carried off by the rush of steam through the valve, V, into the hot well, where the water remains, while the excess of steam proceeds into the atmosphere. An instant later the water recedes between the plates, exposing first their edges to the steam, which condenses thereon, and being still of atmospheric pressure, heats them to nearly 212° Fahr. But in proportion as the remaining steam becomes expanded, additional and colder portions of the plates are exposed by the receding water. At the time the water level sinks below the plates, the greater portion of the steam so condensed, its lateral part being deposited in the plates, which are heated at their upper ends to 210°, and at the lower to about 140° Fahr. The remaining steam is thereupon condensed by the cold jet. The communication is completed before the working piston has accomplished one-seventh part of its stroke. In re-ascending, toward the end of the stroke the water absorbs the heat from the plates in the same successive manner, and issues into the upper passage nearly boiling hot, when it meets with the succeeding discharge of the cylinder, and is carried off into the hot well, as above described.

The advantages obtained by the application of this condenser are—

1. It allows a considerable portion of the steam to escape uncondensed into the atmosphere, and condenses the remaining portion with a minimum of condensing water.
2. The steam which escapes may be used to effect a draught in the chimney, and the boiling hot water partially to supply the boiler, which effects a saving in fuel of at least 10 per cent., and the remaining portion for the heating of buildings, dyeing, and other purposes.
3. The displacing cylinder, unlike the air-pump of a common condenser, abstracts no power from the engine.
4. The regenerative condenser is less expensive and more compact than other condensers, and can be readily attached to any existing high or low-pressure engines.

In the former it gives an additional atmospheric effective power to the engine, and renders it more economical than the best condensing engines. Considerable discussion arose, in which Mr. Scott Russell, Mr. Cramp-ton, and Mr. Robert Stephenson (the chairman), took part, the result of which was highly in favour of the invention.

**STEAM HAULAGE ON RIVERS AND CANALS.**—An experiment has lately been tried, with complete success, on the Gloucester and Berkeley Canal, of a somewhat novel steam-tug for hauling vessels, instead of horse-power. It consists of a continuous flexible rail, or bar of iron, running the whole length of the canal, and made fast at each terminus. Above the deck of the tug are fixed a pair of rollers, between which this flexible iron band is placed, and as they are made to revolve by the steam-engine on board, the grip which they take propels the boat. On the trial in question, after hauling various small craft of from 70 to 80 tons burden, she took in tow a Greek brig, laden with corn to the amount of 350 tons, which she towed against a head-wind to the dock entrance, at a good walking pace. She hauled the common canal boats at a rate of about 6 miles an hour, the speed being but little affected when going against tide. The cost of hauling in the Severn is a heavy item in the transit of goods, and this invention is calculated to diminish the expense 50 per cent., the consumption of coal being only 25 lbs. per hour. In the *Mining Journal* of 6th May, 1848, we inserted a diagram of a plan of Mr. Andrew Smith's, somewhat similar. In this a wire rope is laid down in the canal, and being made to take one turn round a drum on deck of the tug, set in motion by the engine, the vessel is in like manner propelled.

**SHIP-BUILDING.**—Mr. J. Jordan, engineer, Liverpool, has just obtained a patent for certain improvements in the construction of ships and other vessels navigating in water. The invention consists in building vessels with an iron frame, composed of bars rolled into the required shape, to which timber planking is attached by rivets or bolts, to form the sides, bilge, and bottoms. The keel-plate is curved at each end to support a timber stern, stern-post, to which a keel of wood is made fast underneath. The butt-joint, of two planks, is formed by fastening a sheet of iron between it and the frame, and interposing between them a layer of gutta percha, caoutchouc, or other suitable material. In order to protect those portions of iron which are exposed to the action of water from injury, it is proposed to coat them with a combination of gutta percha and blacklead.

## COMPANIES PROCEEDING UNDER THE WINDING-UP ACT.

**KOLLMAN'S RAILWAY LOCOMOTIVE.**—A call of 12l. per share has been made by Master Kindersley, to liquidate the debts of this concern, amounting to about 2000l. The Master has also added to the list the names of those parties whose shares were declared forfeited for non-payment of calls, and who had been previously declared not liable, it having been found that the shares in question were declared forfeited at an ordinary meeting, whereas, by the Deed of Settlement, it was necessary that they should have been forfeited at a special meeting, convened specially for the purpose.

**CHELTHAM, OXFORD, AND BRIGHTON.**—Master Sir George Rose has appointed Mr. Norris official manager, and Messrs. Sewell and Fox solicitors, to proceed with the winding up and settlement of the affairs of this company, on the petition of Mr. H. B. Richardson, architect, of Gray's Inn, who states that the application for shares far exceeded the 32,000 to be allotted; that by default in payment of the deposit the project failed, but that the members of the provisional committee incurred debts on behalf of the shareholders, some of which have been discharged, but that a large amount remains undischarged, without any assets in hand to meet them. The Master has ordered all creditors to come in and prove their claims.

**GREAT LAKES AND LONDON DIRECT.**—The promoters of this concern have announced that its affairs having been fully wound up and settled, under the inspection and superintendence of a committee of shareholders appointed in 1845; a further and final dividend of 5s. 6d. is now payable to the subscribers.

**MADRID AND VALENCIA RAILWAY.**—It having been stated that some 60,000l. of this company's funds was still in the hands of the bankers, the recent inquiries before Master Blunt were directed to ascertaining information on the matter, but the result has led to the conclusion that, recently, the whole of that sum was withdrawn by one individual.—The Master has since issued an order, calling upon all parties claiming to be original allottees or holders of scrip in this concern to produce it for the examination of the official manager, and intimating that any person omitting so to do will not be included in the list of contributors.

**METROPOLITAN RAILWAY JUNCTION.**—Master Kindersley proceeded during the week with the winding-up of this company's affairs, and in which a large number of shareholders, who have paid considerable sums, appear concerned to know what has been done with upwards of 20,000l., paid to the directors as deposit, there being only about 800l. of it now remaining at the bankers'. The scheme was started with the intention of circumscribing London with 20 miles of railway, to unite all the existing railways, with the addition of docks and warehouses for the most extensive trade. Plans and sections for this purpose were completed, but the project is alleged to have failed in consequence of those to whom shares were allotted neglecting to pay the deposit. Between 7000 and 8000 shares were paid upon. The list of contributors is a large one, and is divided for the purpose of fixing them into four classes. The first consisting of those who paid the deposit, signed the deed, and received scrip; the second, those who signed the deed and paid the deposit, but received no scrip; the third, those who paid the deposit, but neither received scrip nor signed the deed; and the fourth, those who neither paid the deposit, signed the deed, nor received scrip. In numerous cases, the return of the official manager to the estate is "no answer" to the summons to attend before the Master, who gives directions for continued efforts to trace out the parties, who, if they do not appear, are fixed on satisfactory proof of their liability being added.

**NORTH LONDON JUNCTION.**—An order has issued for the winding-up of this undertaking, and the creditors are called upon to come in and prove their debts.

**NORTHERN AND SOUTHERN CONNECTING.**—The books and papers connected with the administration of the affairs of this concern, in which the application of a considerable amount of funds is involved, have at length been surrendered, upon certain conditions, to Mr. Goodchap, the official manager, to enable him to proceed with the investigation and settlement of the affairs.

**WESLEYAN NEWSPAPER ASSOCIATION.**—On Saturday, Master Kindersley proceeded with the settlement of the affairs of this concern, which failed in 1848. It was in the hands of a large body of Wesleyans, who became involved by the conduct of those to whom its management was entrusted. About 180 out of 160 of the partners are now fixed with liability by the Master to pay off the 6000l. outstanding debts, and for the discharge of which a call of 4l. per share is made on the 1240 shares held; but as this has not been fully responded to, another call of 2l. per share is expected.

## THE BRITISH ELECTRIC TELEGRAPH COMPANY.

This company's Bill, for the establishment of a new Electric Telegraph Company, came on in committee on Thursday, consisting of the Hon. Cornwall Leigh, chairman, Marquis of Worcester, Viscount Anson, Mr. Manners Sutton, and Mr. Bagge. Mr. Sergeant Wrangham, Q.C., and Mr. Webster, appeared for the promoters of the Bill, and Mr. Talbot, Q.C., and Mr. Hope for the Electric Telegraph Company. Mr. Sergeant Wrangham, at considerable length, opened the case for the promoters, by stating that they were desirous of supplying the public with electric telegraphs on a more economical scale, and on a more improved plan than obtained at the present moment. Arrangements for this purpose had been made by the company with Messrs. Highton, the patentees of improved electric telegraphs. At the present moment there were in the United Kingdom about 6000 miles of railway open, of which little more than 2000 miles were supplied with telegraphs, leaving 4000 without that facility. In addition to this, a great many important cities and towns were without the advantage of electric telegraphs. By the proposed measure those already supplied would be supplied at a lower rate, while on the public generally there would be conferred the additional advantage of competition. There were nearly 2000 miles of railway now constructing, besides 5000 miles for which Acts had been obtained, which at present were in abeyance, but which might with a single way and the electric telegraph, be constructed at from one-half to two-thirds of their present estimated cost. The instruments and apparatus of the British Electric Telegraph Company were much superior in principle, cheapness, expedition, and certainty, to those used by the existing company, and the promoters of the new company sought to extend their operations by obtaining an Act of Parliament to enable more than 12 persons to be owners of the patents, and to work them for the benefit of the public. Powers were intended to be taken to place the wires underground, so as to be out of the reach of damage, and from the effects of atmospheric electricity—a great drawback under the present system. The telegraphs under the plans proposed by the new company could be erected at less than one-half the cost of the existing telegraph company, and the public would consequently be benefited in that ratio. The only petitioners against the Bill were the present Electric Telegraph Company, who, of course, sought to retain their monopoly. Their petitions stated that the wires of the new company would interfere with theirs, that they could not be laid down without their consent, and that their interests as a public company were to be protected by Parliament. Mr. Talbot, Q.C., for the Electric Telegraph Company, contended, at length, that the plans of the British Telegraph Company were infringements on some of the patents which the Electric Telegraph Company already had in their possession, and that the breaking up of the streets to lay down new wires would be attended with inconvenience. On the room being cleared on the question of the *locus standi* of the Electric Telegraph Company, and on the parties being re-admitted, the hon. chairman said:—The committee cannot give any decision to-day, the Speaker being at prayers; but it may be convenient to tell you what would be their decision to-morrow. The committee have decided that they do not think the petitioners against the promoters of the Bill have any *locus standi* against the preamble of the Bill; but I am desirous by the committee to say that in our progress through the Bill we shall be extremely glad to hear any objections that can be brought forward by the petitioners against any of the clauses. We will give our consideration to any of the clauses that may be introduced, and that they may think will affect their interest in any way. The committee then adjourned.

Yesterday, on the re-assembling of the committee, the Hon. Cornwall Leigh in the chair, present the Marquis of Worcester, Viscount Anson, Mr. Manners Sutton, and Mr. Bagge; after corroborative evidence from Professor Cooper and others, the committee declared the preamble proved, and after going through the clauses, adjourned to the 3d June, to give time to the Electric Telegraph Company, the opponents of the measure, to submit certain clauses they require for the protection of their interests.

From the various drawings displayed for the information of the committee, showing the amount of telegraphic communication completed, or being constructed at home and abroad, it appeared that, in the United Kingdom, the railway mileage open with the telegraph is 2315 miles; open without the telegraph, 3781 miles; railways making without the telegraph, 1235 miles; railways not commenced, 4795 miles. The number of telegraphic companies in America amount to 22, covering nearly 10,000 miles. The lines of telegraph completed in France extend over 620 miles, and those in progress over 890 miles. The total completed line of telegraph in Germany is estimated at 2468 miles, and the range in progress of construction at 1210 miles.

**VICTORIA DOCKS.**—The preamble of this Bill for the establishment of new docks, in connection with the Eastern Counties Railway, opposite Woolwich, has been declared proved. It is proposed to have a capital of 400,000l., with power to borrow 135,000l., and to run the line of docks and canal nearly parallel to the River Thames at 600 yards from the bank, communicating with the river at either end by locks.

**CHESTER AND HOLYHEAD.**—Mr. Duncombe has reported from the committee that the objects of this Bill, as amended, are to empower the London and North-Western Railway Company to make advances, not exceeding 525,332l., towards the completion of the Chester and Holyhead Railway, to lease it, and to enable the two companies to make arrangements for working the railway. That the London and North-Western Company already own more than one-half the shares in the Chester and Holyhead Railway, and are, therefore, deeply interested in the completion of the railway.

**RAILWAY RATING.**—At a vestry of the parish of St. Pancras, held on Wednesday—Dr. D. Fraser in the chair—it was stated that the London and North-Western Railway Company had paid for poor-rates, in 1848, the sum of 1714l., and that they also submitted, in 1849, to pay 2416l., in consideration of the enlargement of their premises, but that the vestry had subsequently increased the company's assessment to the sum of 27,468l. net annual rental; and that if the company submitted to the latter extravagant rate, they would have to contribute between 2000l. and 4000l. to the poor-rates of the parish. After a long discussion, it was announced that the vestry would reconsider the assessment.—At a meeting of the commissioners of the Southampton Trust, on Wednesday evening, this company appeared against the assessment of the Euston Station. It appeared that, in 1848, the amount paid in rates to the trust was 508l.; and in 1849, in consequence of the increase of the buildings, they consented to 1050l. The commissioners had now, however, raised the assessment to 23,800l., which made the company liable to pay about 1700l. Evidence was given to show that the value of the property was only 4600l. per annum, instead of 23,800l.; and that, whereas the company only occupied 1-100th part of the trust, they were called upon to pay one-eighth of the rates. The decision was adjourned until the 22d inst.



## ELEMENTARY GEOLOGY.

The interesting inquiries into the formation and original condition of the earth—the successive modifications it has undergone, and the agencies by which these changes have been effected, are felt at the present day to be of the utmost importance; indeed, to so great an extent, that what half a century since was generally only a confused mass of crude ideas and incredible theories, has now become reduced to a system upon which may be founded data as correct in principle, and as certain in practical application, as on any other of the physical sciences. In all great engineering works—to the architect, the miner, and even the agriculturist—a knowledge of geology is indispensable; and so important is it now considered to the future progress of the world, that it forms a distinct course of study for our youth in every academy at all above mediocrity. With these facts before us, it is not surprising that a great demand should have arisen for works treating on this pleasing subject, more particularly those of an elementary kind, which begin at the very threshold of the science, explaining the fundamental laws of the operations of the elements by which all change is effected, and the results to be expected from powers still at work tending to similar metamorphoses.

In the *Mining Journal* of 2d March, 1844, we noticed a work by D. T. Ansted, M.A., just then published, in 2 vols., entitled *Geology, Introductory, Descriptive, and Practical*, and we have now the pleasure to call attention to another volume, by the same author, which has just issued from the press, in the preface of which we are informed, that the rapid demand for, and favourable reception of, the first work, appeared to show that the author had not judged amiss in believing that a want had arisen at that time for a descriptive account of the science, and a statement of its practical bearings; but having been frequently asked to recommend smaller manuals of geology and mineralogy, and the educational use of these departments of science having advanced so rapidly and steadily, he was induced to prepare a volume, which, while perfectly elementary, should be tolerably complete. In the volume before us physical geography has been much more enlarged upon than in his former works; it is here treated as a special subject, and an entirely new division has been introduced—a useful account being given of the materials of the earth as well as the arrangements of rocks, and 250 pages of the work thus contain information scarcely mentioned in his former volumes. The descriptive and practical geological details are principally adapted and abridged from the earlier work, but re-arranged, and some particular portions appear altogether new.

The order in which Professor Ansted has arranged the principal divisions of the subject are—Physical Geography, Mineralogy, Descriptive Geology, Practical Geology. These are subdivided into numerous chapters, which are again classified in sections, with a copious index, and 284 beautifully executed illustrations. The volume contains a complete digest of the science, as at present understood; the division of theoretical views has been avoided, and information is conveyed in the most pleasing and familiar form of what is really known of the earth at its actual surface or to moderate depths, and as conveyed by a knowledge of its density from the calculations of astronomers. The student here ascertains the condition of matter at the earth's surface, and the changes which take place by the action of gravitation and cohesion, heat, light, electricity, and magnetism—the materials of which the earth is made up, and their ordinary combinations—the order of arrangement of inorganic materials—the remains of organic bodies contained in and associated with these inorganic materials—the practical conclusions deduced from this kind of knowledge in reference to agriculture, architecture, civil and military engineering, and mining. To the traveller and the scientific reader the volume will be found replete with interest; and the geological student, in perusing its pages, will find the path to truth smooth and easy of ascent, and his mind led insensibly to grasp the whole details of this apparently intricate, but highly fascinating, science.

We now proceed to give a few extracts, as conveying some idea of the pleasing style of diction, and facile manner in which information is conveyed. In the commencement of the treatise on physical geography we are told—

Upon the earth's surface, and within such moderate depths as can be penetrated by man, matter exists generally in a solid form, except in the case of water, which—though rarely to a depth of more than 5 or 6 miles—covers three-fourths of the surface; and the atmosphere, which invests the whole globe with an aerial veil, reaching 70, or even 100 miles, above the mean level of the surface, but gradually becoming more rare, and its particles more widely separated, in consequence of its elasticity. But the atmosphere and water, although almost their whole substance is made up of gaseous elements (or substances which, when uncompounded, retain the aerial condition at the earth's surface), form only a small proportion of the whole amount of such elements, for probably not less than one-half of all solid rocks consists of oxygen gas, which is thus the most common and abundant of all substances, and one whose properties and influence should never be lost sight of.

The following statistics of the land and water on the surface of the globe are interesting:—

		Square Miles.
The great continent	Europe and the adjacent islands	3,750,000
	Asia and its islands	17,500,000
	Africa and its islands	11,870,000—33,120,000
America	North America and its islands	7,740,000
	South America and its islands	6,500,000
	West Indian islands	180,000—14,400,000
Australia	Australia	3,000,000
	Pacific Islands, &c.	980,000—3,980,000
Total		51,500,000

Without passing beyond the actual limits of direct observation, we find, by the result of soundings, and by other investigations carefully made, that the general configuration of the land is continued to some distance at sea. Thus, if an alteration of level were to take place to such an extent that the sea should in a short time be reduced a thousand feet below its present level, a large tract, reaching from the Scandinavian coast to the islands off the west coast of Africa, would appear as dry land, deeply indented in a few places, but possibly not altering very much the general form of the European continent. But if this depression of the sea should be continued for another thousand feet, very little further change would be recognised; and thus there is in this case a physical feature, permanent through great varieties of condition, tending to prove that the cause of such phenomena as we have described must be sought far back in the history of the world, and must have reference to causes of very wide application.

The distribution of the water is manifestly dependent on that of the land, and detached oceans are constituted according to the form of the continental masses. Although, properly speaking, there is but one great ocean, for it is nowhere so completely cut off and enclosed that a free communication does not exist with other seas, yet the land by its elongation from the Arctic to the Antarctic Circle, and by numerous bays and marked projections, separates the water into five principal portions, which are called respectively the Pacific, the Atlantic, the Indian, the Arctic, and the Antarctic Oceans. The relative magnitude of these, including the inland seas deriving from them, will be seen at once by the following table, and we shall proceed to describe some of their more marked peculiarities:—

		Square Miles.
The Great Ocean	Pacific Ocean	90,000,000
	Indian Ocean	23,000,000
	Atlantic Ocean	2,900,000—118,000,000
The Atlantic Canal	Arctic Ocean	27,000,000
	Antarctic Ocean	3,000,000—30,000,000
Total area of ocean		145,000,000

In addition to the water thus distributed, there is also an area of about 300,000 square miles occupied by the water of lakes and rivers, and of this the great lakes of North America, communicating with the ocean by the St. Lawrence, and the river St. Lawrence itself, form nearly one-half. The mean depth of the ocean has been estimated by Humboldt to amount probably to about 1000 feet.

On the alterations of level of land Mr. Ansted remarks—

We have seen that in the neighbourhood of volcanoes and in extensive districts subject to earthquake action, there are often local and temporary changes of level, consisting frequently of oscillations, and limited to small areas. Besides this, however, elevation and depression of a different and more extensive kind has been observed in many parts of the world where no vicinity of volcanoes and no distinct subterranean action can be traced, to account for such change. The coasts of the Baltic Sea and Northern Ocean, the coast line of Britain, and the shores of Greenland, have been chiefly referred to in evidence of elevation of this kind; but it will be clear, on a moment's consideration, that some peculiarly favourable circumstances are required that we may obtain the required proof of the fact in question. The amount of supposed change is indeed rarely more than a few feet in a century, and no measurements of the elevation of land above the sea-level as accurate as this have been made till within a very few years, owing partly to the real difficulties of measurement, and the liability to error from the imperfection of instruments, and partly to the absence of any admitted and recoverable base line. On the shores of the Baltic, however, where there are hardly any tides, where the inner line of coast is defended by a fringe of islands, and where the rocks are hard and often very near the surface, the means are presented by Nature, and they have not failed to attract notice. The result is, that there appears to have been a gradual but slow upheaval, very different in different places, but sufficient, in the course of the last two or three centuries, to lay bare many rocks before sunk—to expose the foundations of buildings built on the shores at the water line—to choke up and render useless old channels between rocks, and even to lay bare some beds of marine shells. The so-called *raised beaches*, found in various parts of England at a height of from 20 to 500 feet above the present coast line, often exhibit gravel and sand, with marine shells, having all the peculiar features of the existing sea beach; and similar terraces, more or less distinctly marked in various places along the whole European coast line of the Atlantic, afford ample proofs that this change of level and gradual uplifting of the land has gone on for a long while. Some remarkable cliffs, eaten out, as it were, from the hard and steep rocks, at certain heights on the bold edges of Flinck, near the North Cape, seem to prove that there must have been long alterations of elevation and repose; and also that the elevations have been by no means uniform over the whole area lifted, but much more in one direction than any other, and gradually less in amount in a direction at right angles to this.

South America also, as it presents the most magnificent chain of continuous mountain ridges and the largest river systems in the world, seems to afford the most distinct and best instances of slow elevation, and the upheaval of an ocean floor into the main land of a vast continent. Mr. Darwin has shown that for a distance of at least 1200 miles from the Rio de la Plata to the Straits of Magellan, on the eastern side, and for a still longer distance on the west, the coast line and the interior have been raised to a height of not

less than 100 feet in the northern part, but as much as 400 feet in Patagonia. All this change has taken place within a comparatively short period, for, in Valparaiso, where the effect is most considerable, modern marine deposits with human remains are seen at the height of 1800 feet above the sea.

From that portion of the volume treating on Descriptive Geology we give the following description of the London clay:—

The London clay, represented in Sussex by the more compact and concretionary beds found at Bognor, is a well marked and peculiar deposit, generally between 200 and 350 feet thick, and resting on an important series of mottled clays, sands, and pebbles of the same age as the *Argile plastique* of the vicinity of Paris, and for that reason the beds are not unfrequently, though very inappropriately, called the "Plastic Clay Formation." These mottled clays and sands have a thickness sometimes amounting to 150 feet, and are often very distinct in their mineral character from any associated deposits. The middle and principal portion of the London clay is generally of a blackish colour, and tough, but is often mixed with greenish-coloured earth and white sand, and occasionally encloses layers of oval or flattened masses of clayey limestone, called *septaria*, which are traversed in various directions by cracks, filled completely with calcareous spar, and are particularly abundant in the neighbourhood of Harwich, where they are much used in the manufacture of "Parker's Cement." Many parts of the London clay contain also hard bands, either calcareous or siliceous, and sometimes fossiliferous, and the cliffs of Harwich occasionally include, besides veins of septaria, other beds of true calcareous matter.

And conclude with the following, from the introductory remarks to Practical Geology:—

If the reader has made himself acquainted with the facts of geology; or, in other words, if he understands the nature of the materials of which the earth's crust is made up, the order of arrangement of those materials, and the changes undergone both in the actual rocks themselves, and in the position they occupy, he will not be inclined to question the value of such knowledge to practical men, or the nature of the applications of geology to practical purposes. Such knowledge must always be available when any thing is undertaken concerning the earth, either as the basis of operations, or the source whence all valuable materials are obtained. It may be well, however, to illustrate this point by a few simple examples.

Regarding the earth, first as the basis of operations, it is well known to every engineer that the whole management of earthworks, whether for roads or intrenchments, whether in cuttings, tunnelling, or embankments, must be greatly influenced by the nature of the soil, the subsoil, and the underlying rocks—the latter directly modifying the former, and being the original and fundamental cause of all peculiarities of condition. The permanence of any structure also must, in like manner, depend on the rock on or which the foundation is placed, and thus requires a consideration of geological position; while questions of drainage and the source of water supply, both for the use of towns and in agricultural districts, directly depend on the geological constitution of each locality, and without reference to so essential a point, the principles of science concerning these matters cannot properly be applied. It is only within a few years, perhaps, that such an application has been made, but the numerous reports concerning the drainage of towns that have lately appeared, show at once the admitted necessity of something of the kind; and in too many cases they have afforded examples of the want of an acquaintance with the first principles of geology on the part of the engineer.

As to material, again, it is clear that the substances derived from the earth should be studied, at least in some measure, in the place where they occur in a natural state; and no one is really capable of judging concerning the value of material without knowing something of its history. This applies to agriculturists, who should know whence soils are derived, and where to look for desirable rocks for mingling with others at the surface: to land valuers, who ought to be well acquainted with the causes of improvement or deterioration that may be at hand to affect the value of the property they estimate; to builders, who require to select the material afterwards to be used for buildings; to architects, who require to select the material for the construction of each locality, and the ground and that which is beneath it, and its reference to the structure to be erected upon it; and above all to miners, whose business is chiefly confined to rocks generally concealed, and who most of all require a knowledge of laws and conditions, of facts and inferences, concerning the materials of which the earth is constructed, and the circumstances under which these materials are generally present.

DEVONSHIRE GREAT CONSOLIDATED MINING COMPANY.

In last week's *Mining Journal* we gave a report of the proceedings at the annual meeting of this company, held on Monday, the 6th inst., with a full statement of accounts, but deferred the directors' report to our present number, which we now insert. In connection with the report, a very full statement of the financial position of the company, with the appearances and prospects of each mine, was given, from which we find that the quantity of ore in sight was made up as follows:—Wheal Maria, 4703 tons; Wheal Fanny, 20,498 tons; Wheal Anna Maria, 3800 tons; Wheal Josiah, 33,085 tons; and Wheal Thomas, 144 tons—total, 62,230 tons, which, taken on an average at 6s. 6d. per ton, will produce the sum of 392,049l. The number of fathoms driven in Wheal Maria has been 241½; Wheal Fanny, 276; Wheal Anna Maria, 85½; Wheal Josiah, 375½; Wheal Emma, 21; Fremont adit, 23½; and Wheal Thomas, 19½ fms.; in all, 1043 fms., at an average cost of 5l. 7s. 6d. per fm. The different shafts have been sunk 133½ fms., at an average cost of 16l. 8s. 2d. per fm., and the mines 185½ fms., at an average cost of 4l. 6s. 10d. per fm. At Wheal Maria a new wheel has been erected, of sufficient power to work twelve of Brunton's patent frames, with the necessary slime dressing apparatus. At Wheal Fanny 9 additional stamp-heads have been attached. At Anna Maria the steam-engine formerly used for pumping has been adopted for hauling, and a powerful crushing and stamping-engine is being erected, which will effect a great saving. At Wheal Josiah the large water-wheel mentioned in last year's report has been completed, and adapted to Richard's shaft, where it has kept the water both at Josiah and Anna Maria. At Wheal Emma a 40-inch cylinder engine has been erected, and a whim-engine is in course of preparation; and at Wheal Thomas a water-wheel, 36 ft. diameter, both for hauling and pumping, has been erected. From the appearances in all the levels, and the general indications in all parts of this magnificent property, the only conclusion which can be arrived at is, that they are in a most prosperous and efficient state of working, and indicative of high productiveness for many years to come.

The directors have the pleasure of meeting the shareholders for the sixth time, to exchange congratulations on the success of the past year, and to submit for their adoption the balance-sheet, which has already been daily circulated for their inspection. The utility of the annual charges requires little comment. It appears from the item of mine-cost in the account of expenditure, and the quantity of ore sold in that receipt, the cost per ton of ore has been less than about 12s. per ton; and the amount realized per ton of ore has exceeded, by 13s. 11d. per ton, that of last year, notwithstanding the produce for copper was about seven-eighths per cent. less. It would have afforded much pleasure to the directors to have been enabled to announce a greater reduction on the one hand, while on the other they have every reason to be satisfied with the increased price the ore has realized. The directors have availed themselves of several opportunities of inquiring into various suggestions offered for the more economical working of the mines, and, with a few unimportant exceptions, after thoroughly investigating the practicability and policy of them, have been convinced their adoption, involving as they must the inconvenience of change, would not result to the ultimate advantage of the company. It has been found impossible to assimilate wages to the lower standard of the county of Cornwall, inasmuch as the amount of dwelling accommodation, which in the neighbourhood of the mines is scarce and expensive, excessively crowded, and at a most inconvenient distance, and the facility of procuring the cheaper necessities of life, such as are consumed by the Cornish miner, are very much less in the locality in which your mines are situated. Moreover, by paying a higher, at the same time, a reasonable remuneration for labour, encouragement is given to the most efficient miners to exert themselves in a way which it is obvious must tend to the beneficial development of these large concerns. It must also be remembered, that a considerable proportion of the cost is the expenditure constantly occurring in the gradual development of the resources of the property, which, if neglected, might possibly deprive the shareholders of the full benefit of their possessions; and as only a portion of profits, and not of capital, is devoted to these operations, the directors felt they would not have been justified in withholding the necessary means. What has been accomplished in this way, will be more particularly shown in the report on the mines. The first portion of the works for the adoption of water instead of steam-power, as referred to in last year's report, has been successfully completed. Notwithstanding the cost has far exceeded the estimate (arising from the treacherous nature of the ground about the wheel-pit and level) the directors are satisfied the object has been attained, as the machinery is performing its duty with much fewer hindrances than when steam-power was employed, and to the entire satisfaction of the agents of the mine. The other portions will be proceeded with as necessity may require.

The various remaining items of the financial statement speak for themselves. The balance, which shows a sum, in cash and bills, to the credit of the company of 13,667l. 7s. 8d., being an increase on last year's account of 1384l. 10s. 2d. The estimate of liabilities and assets has been made on the same principle as heretofore adopted, due allowance being made for depreciation of stock, and the balance of 72,834l. 11s. 7d., shows an increase on the year's account of 6704l. 11s. 7d. This favourable and satisfactory state of affairs is highly gratifying to the directors, who are warranted in expressing their expectation of a continuance of them, from the large quantity of ore still remaining in the mines, amounting to upwards of 62,000 tons, and the general effective working of the concern, reference to which will be made in the mine agent's report. They trust the shareholders will be equally satisfied, seeing they have not only received an increase of dividend amounting to 3888l., but also accumulated property equal in value to nearly 7000l., during the past year. It is to be observed that the accounts are made up to the 1st March only, which date some large sales of ore have been effected, which will enable the directors to declare in the present month a dividend of 9l. per share, an announcement, undoubtedly, gratifying to all.

One of the last acts of the directors has been to receive and accept Mr. Josiah H. Hinchins' resignation of the office of superintending engineer and mine surveyor. They do not expect, now the mines are in a regular course of working, the interest of the shareholders will materially suffer by that gentleman's retirement from active duty, especially as the directors have recently been enabled to his request, the consulting engineer and mine surveyor to the company, in which capacity he will be at all times ready to advise them in cases of difficulty, or on matters of importance. No other application for the office of director having been made, the directors, whose duties terminate this day, beg to offer themselves for re-election, and trust their past exertions for the interest of the company will be sufficient guarantee for their unremitting attention for the future. The auditors are also willing to continue in their appointment, if elected. The report on the mines has been drawn up as usual. A copy of the documents relating to the same will be found in the offices of the company, and are open to the inspection of shareholders.

UNCERTAINTIES OF MINING.—The Ty Main Lead Mine, near Holywell, was an old mine, but was deserted by the parties who originally took it, under the conviction that there was no ore to be found; but, through the perseverance of Mr. Thomas, of the Bear's Head Inn, Holywell, and other enterprising parties, the mine was taken, and they recommenced working it about two years ago. Last week they came to a vein of ore of silvery quality, more fruitful in silver, than assayed by Mr. Buckley, manager to Messrs. Mather and Co., than any discovered in Flintshire for many years past. The vein is 7 inches wide, and it is supposed that 2 tons of ore will be raised daily.

## GASES FROM THE BLAST-FURNACE.

The communications on this subject by Mr. Montefiore Levi and others, which we published in several Numbers of the *Mining Journal* since Feb. last, give a very general and clear view of the methods of employing the gases from the blast-furnace as fuel in reverberatory furnaces. In the *American Railroad Journals* for November last we find a very full translation from the *Traite de la Fabrication de Fer*, by M. B. Valerois, published at Brussels, in 1843, on this subject, which, in addition to the tables of analysis we have given, goes at length into the rationale of the process. It is here stated that these gaseous combustibles have this advantage over solid ones, that they develop instantaneously the temperature which corresponds to their calorific power, which admits of greater heat being obtained, and one more easily controlled. With gaseous combustibles it is easy to produce either oxidation or a reduction, or a simple elevation of temperature without oxidation or reduction. They are also more economical than solid combustibles, because there is less heat lost. In charcoal blast-furnaces the oxygen of the air delivered by the tuyère is rapidly transformed into carbonic acid; carbonic acid, in contact with charcoal, at a high temperature, passes into the state of carbonic oxide; this causes a diminution of temperature, which limits the zone of maximum heat, or of fusion, to a distance not exceeding 8 to 12 inches above the tuyère. From this line to the top of the boshes the current of gas is principally composed of carbonic oxide and nitrogen. From the top of the boshes the proportion of carbonic acid gradually increases until it rises to a point about half-way from the boshes to the tunnel head, and from thence it remains constant. At the same time the proportion of carbonic oxide diminishes that of hydrogen increases. It is in the upper part of the stack the vapour of water is disengaged. The specific heat of this vapour being considerable, its presence perceptibly diminishes the temperature produced by the combustion. The complete transformation of the oxygen of the air into carbonic oxide appears to take place at a greater height, or farther from the tuyère, in a coke furnace than in a charcoal furnace. This conjecture is based upon an analysis of gas, taken by Ebelman from a cupola 4 in. below the tunnel head. He found it to contain carbonic acid, 11.91; carbonic oxide, 11.91; hydrogen, .99; nitrogen, 75.19—100.00.

A certain quantity of air escapes the blast-furnace; some persons estimate it at one-half; others at two-thirds, the whole quantity employed. It is probable both are too high. Still air does escape unconsumed, and that which is employed yields carbonic acid; but if the bed of fuel on the grate of the furnace was very thick, no free oxygen would escape, and the combustion would yield carbonic oxide, which, in burning a second time, would develop a very high temperature. According to Karsten, it is more and more confirmed, by experience, that the best mode of using fuel in a reverberatory furnace is to convert it, as much as possible, into carbonic oxide, and burn this gas by hot air. It is the most economical, and will produce the highest temperature, and the highest chimneys now in ordinary use can be dispensed with. It may also, by this means, be possible to employ fuel that does not cohere in coking, that is not very pure, or such as has not hitherto been used in reverberatory furnaces.

In the *Mining Journal* of the 9th March are several plans of furnaces for this process. In M. Faber de Faur's furnaces the width of the bridge, bottom, and flue is 2 ft. 5 in., as in the refinery furnace; from bridge to bottom, 5 in.; length of bridge, 3 ft. 6 in.; of the bottom, 4 ft. 8 in.; and flue, 15 in. The bottom is made with morior of raw and burnt fireclay mixed, and near the flue an opening is left for the flow of the cinder, which forms during heating. The mode of working this furnace is, when lit, to bring it to a white heat; the iron to be charged is then plunged into a thin grout of clay and pulverised cinder, put into the stove, dried, and brought to a red heat. It is then charged into the furnace, care being taken that the blooms do not touch each other. When heated on one side they are turned, and having attained a uniform heat, they are withdrawn. A charge is from 4 to 6 cwt., and half an hour is sufficient to heat them. The temperature, by experiments made at Wasserafinger, was 2480° Reaum. = 3100° cent. = 6852° Fahr.

EMIGRATION TO THE UNITED STATES.—In the *Mining Journal* of April 27 we noticed the formation of a company for the purpose of facilitating emigration to North America, under the title of the United States Land Company. In connection with the company is a collateral undertaking, for taking possession of, and working mineral lands, and any beds or streams of the precious metal; and for the carrying out this latter plan a separate fund is proposed to be raised, which is already in a forward state. Mr. Catlin, the local superintendent, will proceed to Texas with the first batch of settlers, the property which the company have already secured being about 60,000 acres in Milam County, in that state. This county is the finest portion of the state, well supplied with streams of pure water, and with quantities of fine timber for building and other purposes, and interspersed with rich prairie or meadow land. On Mr. Catlin's settlement of the emigrants, he will, with a number of gentlemen who have determined to accompany him, proceed to the eastern spurs of the rocky mountains, to explore their mineral character; and a right or title will be secured to any lands which may be found likely to cut rich deposits of the precious or other metals. Parties going out under the auspices of this company will avoid the privations which have been endured in California, as they will reside under a well-organised plan for their comfort and protection.

SHALL AMERICA MANUFACTURE OR IMPORT IRON FOR HER RAILROADS?—From the extent to which we are engaged in this country in the construction of railroads, and from the fact that we are now importing all the rails we use, it becomes a matter of great importance to consider the influence which the large drain of money required for their purchase will exert, both upon the general business of the country, and upon the ability of our people to continue the construction of these works. The *American Railroad Journal*, a paper devoted to the railway interests of the country, says:—"Unless there should be some unforeseen check given to these enterprises, there will be constructed at least 10,000 miles of railroad in the next 10 years. This may seem a large estimate to some, but taking into consideration that, to make up this amount, each state would have to build only 38½ miles yearly, and that many will build twice or three times that extent, it will be found to be much below, instead of above, the mark. A very large amount of iron in addition will be required for re-laying of tracks, and repairs of roads. This estimate will require over 100,000 tons annually, and will, at present prices, cost at least \$5,000,000. This sum, therefore, must be sent yearly to England for the article of rails alone, unless we can engage in their manufacture."—*Miners' Journal*.

LOCOMOTIVE ENGINES IN AMERICA.—Mr. Norris, of Schenectady, has just placed upon the Syracuse and Utica Railroad a new engine, called the *Lightning*, designed for high speed. We take the following description of it from a Syracuse paper:—"The *Lightning* came up yesterday afternoon from Utica with a train of six eight-wheel cars, with a strong head wind, in 66 minutes. This is the greatest speed on record, in this country or Europe; taking the length of the road, 53 miles, the running speed would be just 54 minutes. Her cylinders are 16 inches diameter, 22 inches stroke, placed horizontal, midway of the cylindrical part of the boiler. One pair of driving-wheels, 7 feet in diameter, are placed immediately under the fire-door. In front of the fire-box are placed a pair of bearing-wheels, 4 feet in diameter. The boiler is supported in front by four wheels of 3½ feet diameter, in a truck. The eccentrics are placed on the outside of the wheels, attached to the crank-wheel. Her valves are worked direct, without the intervention of a rock arm. She uses her steam expansively, from ½ to ¾ of the stroke of the piston, always preserving the same lead as when working at full stroke. Great care has been taken to prevent the condensation of steam before it enters, and while doing its duty, and in the cylinder. The wheels were manufactured by the Messrs. Norris of solid wrought-iron; the spokes, hub and rim, all in one solid mass. She was built at Norris's Locomotive Works, Schenectady, by Edward S. Norris, after a plan furnished by Septimus Norris. Her power, as a daily duty, is 600 passengers, 60 miles per hour. Her boiler contains 116 tubes; 2 inches diameter, 10 feet 3 inches long; fire-box outside, measures 5 ft. by 3½ ft.; water space all around 3 inches. The boiler stands 5 feet 4 inches above the surface of the rail. She has a beautiful brass lever clock—a new plan for ascertaining the height of water in the boiler, shown in a glass tube; also a small hand lantern; an odometer attached to the wheel for registering the number of revolutions of the driving wheels; also a contrivance for adjusting any desired transfer of weight from the driving wheels to the bearing wheels. Her beauty of construction is altogether superior to anything of the kind ever seen in this country. The character of the workmanship is undoubtedly grand, and accurate to mathematical nicety. The architectural design throughout is faultless. The tender and tank is also a specimen of beauty of design and good workmanship, resting upon six wheels, and the tank surmounted by a handsome railing."—*American Railway Times*.

IMPORTANT TO PARTIES BECOMING MEMBERS OF SOCIETIES AND CLUBS.—In the Westminster County Court, on Thursday, the Royal Agricultural Society of England, through their secretary, sued an independent gentleman, named Knight, for three years' subscription, at the rate of 12 s. a year. Judge ordered payment on the 16th inst. His honour said that, if gentlemen chose to enjoy the honour of belonging to societies and clubs, they must pay their share. That they must not add to their signatures M.R.A.S. in their canvassing prospectuses, without paying for their diplomas.

\* An Elementary Course of Geology, Mineralogy, and Physical Geography. By David T. Ansted, M.A., F.R.S., &c. London: John Van Voorst, Paternoster-row.



## Original Correspondence.

## THE IRON TRADE.

SIR.—Having been carefully watching the course of the iron trade generally, and especially that of Scotch pig-iron, the fears expressed, in my letter, published in your Journal of the 13th April, that unless the demand was sufficient to raise the prices permanently, a decrease would take place in the production, it is now quite evident that such anticipations were correct, as the makers have determined to blow out one-third of the furnaces lately in blast; and this determination is now being carried out. At the present time, there are about 45 furnaces out, owing to the strike of the colliers. How long this strike may continue is uncertain; but should the colliers determine to accept the masters' terms, still one-third will remain out for at least two months, and probably until a higher range of prices is established than has existed during the last two years, and pig-iron become once more remunerating to the makers. This object appears likely to be attained, as the reduced make will, from present appearances, be soon overtaken by the consumption; for upwards of 41,000 tons were shipped during the month of April, and to this must be added the quantity taken for local consumption by foundries and malleable iron-works, which is variously estimated at from 5500 or 6000 tons per week; but may be safely taken at the lower quantity, say, 22,000 tons per week.

Now, if 15 furnaces, which belong to the malleable iron makers, and consume all their make, are deducted from the total number in blast at the commencement of the year, there remain 97 furnaces; of these, one-third are put out by the makers, leaving only 65 furnaces to supply the general demand, even should the colliers return to work.

If the quantity of iron produced by the above 15 furnaces (say, 1700 tons per week) be deducted from the quantity consumed locally (say, 5500 tons), there remains 3800 tons per week, or 15,200 tons per month, which, added to the shipments for April, gives a total of upwards of 56,000 tons for shipments and consumption generally; so that, if the demand continues in the same proportion, which, however, can scarcely be expected, the stock at the end of the year would be reduced to almost nothing; but I assume that, for the remaining eight months, from May to December inclusive, the shipments will reach the monthly average of last year—viz.:

31,500 tons = 252,000 shipments.	65 furnaces x 110 tons per week of malleable iron for sale, after deducting their own consumption =
15,200 tons = 121,600 local consumption (generally).	7150 tons
373,600	35 weeks
	250,250
	230,000 present stock, as generally estimated.
	480,250
	373,600
	106,650 tons stock, Dec. 31, 1850.

You will observe, it is assumed, that the shipments will only reach the average monthly shipments of last year; but as they have considerably increased in April, and as it is generally believed that the stocks at Run-corn and Fleetwood are considerably reduced, it may fairly be presumed that more will be shipped during the present year than during the last, and the stock, consequently, be further decreased.

I hand you a statement of the shipments for April:—

From Bromfield, Port-Dundas, and Kirkintilloch.....	Tons 23,797
" Ayr, Ardrossan, Troon, and Linn.....	9,501
" Charleston, Bonness, Leth, and Alloa.....	6,728
" Greenock and Port-Glasgow.....	1,580
Total.....	Tons 41,576

Since writing the above, my attention has been called to some remarks in the *Times*, *Daily News*, and *Chronicle*, condemning the mode of carrying on the Scotch pig-iron trade, &c.; and it appears quite evident that the ideas have been supplied from one source, as they are somewhat alike; and it is certainly curious that they should appear simultaneously in three different papers; but as it is generally known that some parties have considerably overdone themselves, and now, finding out their mistake, are very anxious to cover themselves at the low rates, it is easily understood the reason why false, or, at all events, exaggerated, statements have been given, as it is well known by all persons conversant with the subject that the stock does not exceed 230,000 tons.

A Subscriber.

## GOVERNMENT INSPECTION—LIFE INSURANCE.

SIR.—It may be concluded as certain that no measure on the important subject of inspection will now be introduced in the present session—that is to say, by the Government, who appear to proceed with that wise and commendable caution so serious an enactment requires, involving as it does a comprehensive change in the most important branch of our domestic industry. Some Radical Member, who, as usual, bestrides benevolence in pursuit of reputation, may bring forward again a futile plan of that ill-digested character which can only be expected when legislation is founded upon ignorance; and the discredit of the abortion will be transferred with the usual measure of injustice. But as the Government reports are not yet presented, and the time which remains is inadequate for digesting any consistent enactment, we may be pretty certain that the incubus, or chimera, or whatever title is to be appropriate for a plan avowedly founded upon imitation of a foreign practice, which has lately proved its efficacy by the loss of 79 lives in one explosion in Belgium, will not rear its head this year as a mark for the ridicule of the well-informed and the commendation of the ignorant. In the meanwhile, it might be very interesting and instructive if your able correspondents, Mr. Sutcliffe, Mr. Deakin, "Black Diamond," "T. R.," and others, who are evidently sound practical miners, would favour you with their opinions on the general tendency of the system of life insurance, to which I referred in your Journal of the 4th inst. Their experience could furnish valuable hints as to the benefits it may create, and the difficulties which may attend its introduction. The lamented Dr. Reid Clanny, whose untiring and disinterested exertions in originating and perfecting the safety-lamp have covered his name with honour, would, I am sure, had he been spared, have addressed his benevolent energies to promote this, as every other plan which could benefit the working miner; I, therefore, confidently invite his friends and admirers to the consideration of a subject which I am sure he would have approved. The objects which all parties have at present in view, appear to be fourfold. The two first are legitimate—improvement in colliery arrangements, so that risk may be diminished; and provision for the relatives of those who, after all has been done, fall victims to the irremediable danger of the occupation. To men of practical information, who know that accidents must come, the latter object becomes, in every benevolent light, of the greatest importance; and if, as I believe, the prosecution of it by a system of life insurance will re-act with great power as a stimulus to promoting the protective improvements which are the object of the first, there is certainly a question before us worthy of the utmost consideration and scrutiny. The other two illegitimate objects are, the special advantages of the trade of agitation to those who have selected the colliers as the present instruments of their vocation, and the advantage of the creation of a large body of inspectors to those who anticipate their own selection for the appointments. That the first of these spurious objects will be prosecuted *selon les regles*, the great experience underground of the M.P.'s who have undertaken it, is a sufficient guarantee. We see the first fruits in a petition from 9000 or 10,000 colliers, praying the Government to send down inspectors to remove their dangers. They have probably been told that the Government has on hand a stock of inspectors—perhaps, that they are made in London, at the shortest notice, by means of a row of buttons and a mark on the collar. We very well know that, when men of education will condescend to go about, and deceive poor people with promises, they are very easily induced to sign anything. Their interpretation of a provisional Government was one to find them in provisions; and of universal suffrage, a method by which all should suffer alike; and they may have been persuaded that an inspector is an apparition in the mines to scare away their dangers. Were the solid benefits of the working miner at all in the minds of their deceivers, how much better would it be to spend their superfluous time and energies in persuading the masses to devote a fractional amount of their yearly earnings to make the provision now afforded for their families, in the event of a casualty. A certain advantage would be their immediate possession; and each man would insensibly add his weight to the establishment and maintenance of a powerful means of promoting the ultimate alleviation of their dangers, so far as they can be alleviated. It is true, the agitator's occupation will be gone, and the expectant inspectors will be disappointed; but I fear the former need not despair; in some quarter or other they are sure to find fully and discontented passions to feed upon—these are the carrion which form their proper food. And as to the disappointed inspectors, if they will

submit to contract the range of their ambitious vision, and, coming down to the level of daily life, confine their practical energies each to the management of one colliery well, granting it the benefit of their superior intelligence, they will do some good in their sphere. This may result equally to their advantage, as to beat their tiny wings in a vain attempt to perch upon some imaginary pinnacle, as national benefactors.

May 14.

DAVID MURPHY.

## THE COLLIERIES' "EIGHT-HOURS BILL."

SIR.—No sounder advice than that you gave the working miners in last Saturday's Journal, was ever offered them by the most enlightened friend of humanity. Without doubt, at a time like the present, when Science has centripetal powers of production, "eight hours a day" is long enough, and more than is necessary, for a fellow-creature to toil in darkness and danger; but by some monstrous blunder of the social engineers of the past and present generation, every addition to our means for the creation of wealth, instead of being followed by a corresponding augmentation of physical comfort and reduction of human toil, has only tended to deprive the labourer of the few comforts he formerly used to enjoy, and rendered him more and more a slave, to be used and abused for the benefit of others, and treated worse than the beasts that perish. When will legislators and society comprehend the sacred truth, that the happiness of each is best secured by promoting the good of all? or when will the enlightened sages of the free-trade school perceive the gross absurdity of that system of political economy which permits famine to result from over production? The reduction of the hours of labour, not only by the miners, but likewise by every other useful class of producers, in proportion to the want of employment, would do more to improve their condition (without inflicting injury on any) than ten thousand strikes for high wages ever can do, while they continue to glut the market with their unsought produce; and is not only the only rational remedy against that evil, but could be applied most effectually, and with the utmost facility, without any legislative enactment; and would to a certainty be so applied, if the workers, and those who direct their energies, could be made to perceive the advantages of such a course, and, forgetting former differences, unite heart and soul to carry such a proposal into effect. I hope, Sir, you will, as often as occasion offers, direct the attention of employers and employed, whose interests are identical with the benefits to be secured to both, with equal advantage to the State, by adopting the course you have so ably and humanely advocated.—AN ENGINEER OF THE NEXT GENERATION: London, May 16.

## THE COLLIERIES' EIGHT HOURS BILL.

SIR.—By your last Journal it appears that an agitation is to be attempted on this subject. If this be so, it can scarcely fail to do more harm than good. In most districts the colliers are paid on the quantity, or weight, of the coal produced, and not on the number of hours they may be employed. Whether they work in one, two, or three "shifts" in the 24 hours is a matter of arrangement between themselves and their employers. The colliers generally have the option of "shift," or day-work, and if they elect to work 10 hours instead of 8, it is their own choice. If they object to the longer period, they have the power to help themselves to a remedy, without applying to Parliament. Where colliers are worked during the whole 24 hours, it is the interest of the coal-owner to have three "shifts," with alternating changes as to the periods in which each man is down the pit; and, in cases where there is no night-work, it is still optional with the men to determine the number of hours they may be disposed to work. This is believed to be the general practice throughout the mining coal districts, but there are exceptions in those places where the "butty" system prevails. These exceptions, however, do not constitute such an amount of evil as to require the remedy proposed. If the colliers imagine that a limitation of the hours will increase the price per ton of the coal produced, and that, supposing an Act to be passed to that effect, they will be able to earn the same wages in 8 hours as they now do in 10, they are mistaken and misled.

The agitation of such a question just now cannot be viewed otherwise than as impolitic and unwise, and must necessarily tend to embarrass their best friends in their endeavours to ameliorate their condition. To effect this, there must be a combined effort, directed to one great object, otherwise the miners will remain session after session without any Act of Parliament being passed in their favour. These opinions are at variance with those expressed by you in a leading article in your last Number; but your long and able advocacy of the miner's cause, and your earnest interest in its success, will doubtless grant these remarks a place in your Journal, although they may be somewhat opposed to your own views. You and your correspondents have one great object to accomplish—viz.: to obtain from the Legislature an effective and practical protection to the miner from all unnecessary risks of life or accident. Let this be first accomplished before we enter into doubtful or fancied grievances. An official inspection, however cramped and limited in the first instance, is the only practicable measure that can be obtained; and to effect this, all minor objects ought to be held in abeyance. Patience and perseverance will do much, if there be no "division in the camp;" but if, unhappily, fancied grievances are mixed up with real ones, and there be any departure from the strict line of honour and honesty in advocating the miner's claims to legislative protection, advantage will doubtless be taken of it, and we shall lose the little that has been so long promised, and the realisation of which has been so often procrastinated.—J. RICHARDSON, C.E.: London, May 13.

## ON THE PURIFICATION OF GAS.

SIR.—The accompanying letter, from the secretary of the Rugby Gas Works, in reference to the infringement of my patent process for purifying coal gas, sufficiently explains itself, as it will be at once evident that the company has discontinued the employment of my materials (sulphate of lime and oxide of iron), as soon as distinct evidence was afforded of the validity of my claim. By publishing these letters in your valuable Journal, you will convey a correct impression of the real merits of this question to the public.—RICHARD LAMING: Poplar, May 13.

SIR.—I laid your letter of the 1st inst., as to purifying gas with sulphate of iron and other things therein mentioned, before the directors at their meeting yesterday, and am directed to inform you, that the process you mention is not in use at these works.

Rugby Gas Company, May 7.

C. G. WATSLAW.

## INTERUPTION OF THE NAVIGATION AT RIGA.

SIR.—I am well aware that your interesting scientific Journal is extensively read in Russia, and I wish, therefore, through its columns, to call attention to the bar which now so seriously affects the town and trade of Riga. This obstruction has been forming for several years, and has at length reduced the depth of water to 9 feet, which is much too shallow for heavily laden vessels to pass over in safety. Dredging by the ordinary method such an enormous mass of sand would be a laborious work, of much time and expense; and I, therefore, suggest that several large charges of gunpowder (say, 2000 lbs.) be sunk deep in the sand at suitable distances, and fired simultaneously, by the aid of the galvanic battery. The charges could be deposited by means of small cylinders, sunk by means of the excellent pneumatic system of the late Dr. Potts, which could be withdrawn, leaving the charges in their proper position. These powerful explosions would, of course, disperse the sands in all directions, and open the channel for navigation with safety.—G. SHEPHERD, C.E.: May 16.

## GODWIN, TONGUE, AND CHANNEL SANDS.

SIR.—I deferred my communication, in reply to the remarks of "A Merchant," in your valuable Journal of 27th April, fully expecting and trusting that some one connected with the Dublin Steam-Packet Company would have repudiated the charge of drunkenness and incompetency, so covertly made against the captain of the ill-fated ship, *Adelaide*. Are we, from the assertion of "A Merchant," to conclude that all the vessels which founder at sea, or are wrecked on sands, are under the command of drunken incompetent captains? If such be the fact, those persons who appoint such men to the command, ought to be considered guilty of manslaughter, and the case should be fully investigated by the Legislature. I had some acquaintance with the captain of the ill-fated *Adelaide*, and a more straightforward, steady, sober man never existed, consequently "A Merchant's" charge, at least in this instance, is erroneous. I am not aware that I made any attack on either merchants or underwriters—such would have evinced an entire ignorance on the subject, as I am fully aware that all matters connected with lighthouses are under the control of the Trinity House. Your correspondent, however, does not, in any point, dispute the acknowledged fact, nor have I yet found one who has; that a permanent light on these dangerous sands, with proper screaming apparatus, to warn mariners of their approaching danger, would prevent, to a great extent, the continuous disasters which occur. It is only during the past week that three fine vessels, with all the freight, and the entire crews of two, have

been lost on the outside bank of the Godwin; and the crew saved, that of the *Buffalo*, remained in the most perilous position for a whole night and day, before they were discovered. These casualties, succeeding each other in such frightful rapidity, are really awful; and as your correspondent insinuates that shipowners begin to complain of the charge for lights, I would suggest that the expense should be borne by the country generally.

May 14.

G. SHEPHERD, C.E.

## MOTLEY'S UNDER-SUSPENSION BRIDGE, &amp;c.

SIR.—I was much gratified in viewing several ingenious models of Mr. Motley's inventions, among which is a beautiful model of his plan for a bridge at Clifton, which appears to me to be the most perfect arrangement of materials to obtain strength and security I ever had the pleasure of witnessing. The structure is based upon the united principles of tension and compression, so harmoniously blended, as to give the most unerring security, combined with lightness, economy, and elegance, that can be well imagined or desired; also a model of what he terms an inflexible suspension, which appears, by its arrangements, to possess that property in a much higher degree than has ever yet been effected, which arises from his plan of supporting the suspending bars by upright supports from the floor of the bridge at suitable distances, so as to prevent the possibility of the suspenders ever assuming a curved line, and consequently resisting, in the highest degree, possible deflection. His plan also of graduating the suspending bars up the towers is, in my opinion, preferable to that of suspending from the top; for although a saving of 20 per cent. might, therefore, be effected in the weight of materials, yet the bringing down the centre of gravity would, I think, amply compensate that advantage, giving at will greater security, as well as more certain inflexibility, to the floor; at all events, whether the suspenders are at the top, or graduated, his original and ingenious plan of supporting the suspending bars most certainly renders such an inflexibility as cannot possibly be obtained by any other means; and, therefore, it is my decided opinion that it is unquestionably the firmest and most economical plan of suspension ever yet effected.

Fleet-street, London, May 16.

GEORGE SHEPHERD, C.E.

QUALIFICATION FOR A MAGISTRATE IN A MINING DISTRICT.—A short time since two gentlemen called upon a magistrate (not 100 miles from Bovey Tracey, Devon), respecting some mining property (i.e. iron mines), when the following dialogue took place:—Magistrate: Have you seen Mr. W.'s mine?—Gentlemen: No, we have not.—Magistrate: Why, they tell me it is a steel mine.

PORT NATAL.—We have on more than one occasion called attention to this interesting colony, situate on the eastern coast of Africa, and said to hold out great advantages to emigrants from this country. Within easy distance, compared with Australia, possessing a healthy climate and a fertile soil, producing all the products of the southern states of America and the West Indies in abundance, as cotton, tobacco, &c. We are glad to notice the publication of a map of the colony, by Mr. Wyld, of Charing-cross, showing the entire division of the colony into districts, of which six are already defined and named. The colony is bounded on the north and east by the Uninsiyate and Tsekela rivers and the ocean, on the south by the Pacific, and on the west by the Great Drakenberg or Quathlamba Mountains, which reach an elevation in some parts of 4000 feet, forming a natural boundary for 180 miles, the whole length of the colony from north to south.

WATERFORD AND KILKENNY RAILWAY.—The works on this line are rapidly proceeding towards Knockwilliam, and that portion between Thomastown and Ballylowry is already opened for traffic. The Lattice-bridge (noticed in last week's *Mining Journal*) underwent the final test on Friday last, before Capt. Larcom. A loaded train of 180 tons weight was first passed over the bridge at various rates of speed, and subsequently the engine was put into a state of repose, with a train weighing 164 tons, in the centre of the structure. The temporary deflection was found to be 2½ inches, but on the removal of the weight the timber sprang back so far as to leave the deflection but 1 inch—thus, since the removal of the centerings, and throughout the entire of the experiments which have been tried, the permanent deflection of the structure has been less than 8 inches, and the success of the design is most clearly demonstrated; in fact, there can be no doubt that the bridge would bear a pressure of 400 tons, whilst the entire weight of the ordinary trains which will pass over it, cannot, on an average, exceed about 80 tons.

CORK, BLACKROCK, AND PASSAGE RAILWAY.—An engine was run, for the first time, on this line of railway on Tuesday evening, merely to test the steadiness and solidity of the rails. The line, it is confidently stated, will be opened for general traffic on or before the 1st June.

SOUTH WALES RAILWAY.—THE LANDORE VIADUCT.—This great undertaking is fast approaching completion. The flooring had all been laid, with the exception of that portion immediately over the River Tawe, when Mr. Brunel, the engineer-in-chief of the line, inspected the work on Saturday. Since that time this portion also has been laid. The extreme length of the viaduct is 1797 ft. 3 in.; it consists of 37 spans, or trusses, the first of which, near Siloh Chapel, is about 44 ft. 3 in.; the second, 42 ft.; third, 50 ft. 10 in.; fourth, 50 ft. 9 in.; fifth, 36 ft. 1 in.; sixth, 36 ft. 3 in.; seventh, 33 ft. 9 in.; eighth, 26 ft. 4 in.; ninth, which crosses the turnpike-road, 74 ft.; tenth, crossing the canal, 73 ft. 7 in.; eleventh, 42 ft. 5 in.; twelfth, 41 ft. 9 in.; thirteenth, 41 ft. 4 in.; fourteenth, 41 ft. 1 in.; fifteenth, 41 ft. 3 in.; sixteenth, 41 ft. 4 in.; seventeenth, 41 ft. 5 in.; eighteenth, 40 ft. 9 in.; nineteenth, 62 ft.; twentieth, which crosses the river, 110 ft.; the next, 62 ft.; the twenty-second, 42 ft.; while the eight following are of the same dimensions; the thirty-first is 41 ft. 8 in.; thirty-second, 41 ft. 7 in.; thirty-third, 42 ft. 4 in.; followed by the thirty-fourth, 41 ft. 5 in.; the three last are of the respective lengths of 41 ft. 6 in., 41 ft. 10 in., and 45 ft.; making a total length of 1797 ft. 3 in. The span of the centre arch over the river is 102 ft.; the height from high water-mark to under beam, 73 ft.; to top of rail, 75 ft.; the total height from the bed of the river to the top is 109 ft. 9 in. Instructions have been recently received for the construction, at Landore, of a ticket-stand, for the accommodation of passengers. It will be about 200 ft. in length.—*Swansea Herald*.

MARMATO GOLD MINING COMPANY.—ALLEGED ROBBERY.—Our readers will remember that, in the summer of last year, a charge was brought by Mr. J. D. Powles, chairman of the Marmato Mining Company, against Mr. Wm. Degenhardt, a German, who had been superintendent at the mines in South America, for stealing a bar of gold, weighing 33 lbs., and other valuables, the property of the company. The particulars appeared in the *Mining Journal* of 7th and 21st July last; and the result of the examination was, that the criminal charge was given up, and 6000. left in a banker's hands, waiting an investigation. On Thursday, Mr. Child, of the firm of Wire and Child, Mr. Games, and Mr. Justin, clerk to Messrs. Maples, Pearce, and Co., attended before Mr. Norton, at the Nambeth Police Court, respecting the disposition of the 6000. Mr. Justin recalled the circumstance to Mr. Norton's recollection, and stated that he had, according to his suggestion, prepared the necessary document to submit the whole case to arbitration; but Mr. Games refused to sign it. Since that, Mr. Games had been seriously ill, and had placed his client in the hands of Messrs. Wire and Child, who had also objected to go into arbitration. Mr. Games now said that, in consenting to deposit the money, he never meant to compromise his client's right to bring an action for the false imprisonment and the serious injustice done to him; but merely as a security to abide any information which might arrive from South America. Messrs. Wire and Child, to whom he had given up the case from illness, were about to seek redress, and, of course, Mr. Powles was anxious that the matter should be settled by other means. Mr. Justin admitted he had no evidence to sustain a charge of embezzlement; but he had documentary evidence to prove a loss of 2000. Mr. Child protested against such assertions without proof. Mr. Norton endeavoured to bring the parties to some amicable arrangement, but without effect. Mr. Justin refused to deliver up the 6000. If an action for false imprisonment was brought; and Mr. Child refused to give up his right of action, or deduct the 2000.; and thus the matter rests at present.

## ACCIDENTS.

Charleston United Mines.—Wm. Shepherd, a miner, was killed while employed landing the kibbles at the top of the shaft. The miners underground, finding that the kibbles did not come down, thought that something was wrong, and on proceeding to grass, went into the engine-house for a light, and on reaching the top of the shaft where Shepherd had been working, they found him lying on his face, and saw a quantity of blood on the ground. Assistance being procured, he was raised, but was quite dead. It appeared that he had received a blow on the nose. Mr. Tucker, surgeon, of St. Austell, was sent for, who found him quite dead. He considered that a small blood-vessel had been ruptured on the brain, which produced apoplexy, and that the injury on the nose, which was broken, was caused by his falling against a piece of iron where he was working.

Conistone Copper Mines.—Whilst W. Birkett was ascending a shaft, he fell from the ladder a depth of 15 fms., and sustained such injuries as ultimately occasioned his death.

Wheat Butler.—John Martin Cooke fell from the ladder as he was proceeding to his work, and was killed.

St. Germans.—Richard Thomas, engineer at Caradon Mines, who had come to fetch a bob for one of the engines brought there by water, on lifting it from the quay into the waggon, by some means it slipped round, and he being under it, it came on him, and crushed him in such a manner as to cause his death in a short time.

Perris of Miners.—A melancholy accident occurred on Friday to Edward Jones, miner, of Groesvenor, near Holywell. After he had descended a shaft of great depth, his fellow-workmen fastened a wheelbarrow to the kibble, to be lowered down after him, and unfortunately the wheel of the barrow came loose from the socket on the way, and fell on the poor fellow's head, and killed him on the spot, leaving a wife and four children to deplore their loss.—*North Wales Chronicle*.

Terrible Catastrophe in Algeria.—A fearful event signalled the 5th of May 4, which had been fixed by MM. Barthelon and Dussaud, the engineers of the hydraulic works, for the explosion of a mine in the quarries of Bab-el-Oued. It was charged with about 3000 lbs. of powder. The numbers who were on the heights at the moment of explosion may have been about 5000, attracted by the fame of a previous successful experiment. The match was lighted, and about 20 minutes passed before the two receptacles, one holding 5000 and the other 3000 lbs. of powder, were reached, when the 21 boxes filled with powder exploded; some minutes afterwards a detonation was heard in the interior of the mountain; a thick cloud of smoke covered the quarry, and a shower of stones and pieces of rock were thrown in the direction of the town with prodigious force. Persons at more than 800 yards from the quarry were struck, and the projectiles even reached the terraces of the Casbah. One universal consternation prevailed, and as the spectators were divided into groups, it was not for some time that the whole extent of the evil could be appreciated. Eight persons were killed, and many dangerously wounded. Amongst those killed is M. Jourdan, Juge d'instruction, who was struck more than 600 yards from the spot. The festivities were, after such an event, postponed.



## Proceedings of Public Companies.

## MEETINGS DURING THE ENSUING WEEK.

TUESDAY.....Glen Osmond Union Mining Company—offices, at Two.  
London Mutual Life and Guarantee Society—offices, at One.  
WEDNESDAY.....National Bank of Ireland—offices, at Twelve.  
Promoter Life Assurance Company—offices, at half-past One.  
THURSDAY.....Cambridge Consols Mining Company—offices, at One.  
FRIDAY.....Crown Life Assurance Company—offices, at Twelve for One.  
[The meetings of Mining Companies are inserted among the Mining Intelligence.]

## PROVINCIAL BANK OF IRELAND.

The twenty-fifth annual meeting of the proprietors of this bank was held at the establishment, Old Broad-street, City, on Thursday, the 16th instant.

M. ATTWOOD, Esq., moved that Oliver Farrer, Esq., take the chair, which was seconded by Sir ROBERT CAMPBELL, Bart.

The CHAIRMAN said, their first duty was to re-elect the directors whose names were submitted, there being no other candidates; they were as follows:—Bonamy Dobree, Jun., Esq.; Elliot Macnaughten, Esq.; George R. Robinson, M.P.; and Sir John Young, Bart., M.P.—These gentlemen having been unanimously re-elected, the CHAIRMAN requested the secretary (Mr. Hewat) to read the report, which was as follows:—

The directors have much pleasure in again meeting the proprietors at this the twenty-fifth annual meeting of the bank, in order to submit to them the results of the business of the past year, which, though not so favourable as those heretofore produced on similar occasions, are yet such as may be considered satisfactory, when viewed in connection with the present circumstances of Ireland.

It has been stated in previous reports, and the proprietors must be otherwise well aware that, by reason of extensive injury sustained by the potato crop, the agricultural produce of Ireland in the years 1846, 1847, and 1848, was greatly deficient, and large importations of foreign corn were, in consequence, required. This continuing for several successive years, has tended greatly to diminish the resources of the country, and has had a most depressing and injurious effect upon the condition of the people, rendering the business of banking more difficult and less productive than in ordinary years. Improvement, under such circumstances, must be gradual, and a return to more prosperous times can only be expected after a succession of favourable seasons; and it is, therefore, satisfactory to be able to state, that though the grain crops of the year 1849 varied a good deal in the different districts in Ireland, they are believed, on the whole, to have been about an average. The potato crop was large, and though it was affected by disease, this appeared at a more advanced period of its growth, and it certainly sustained considerably less injury than in the year 1848, or even in 1846.

Supplies of foreign corn have still, however, been required during the past year, and instead of exporting a large quantity of corn and flour, as in the years prior to 1846, Ireland, with greatly diminished resources, has been under the necessity of importing corn, to a very considerable extent, for her own consumption. The depressing and exhausting effects of such a drain on the resources of a country depending so much upon agricultural produce, cannot be better illustrated than by referring to the great difference between the amount of the notes of all banks of issue in Ireland in actual circulation at a period anterior to the commencement of these calamities, and at the present time. In April, 1845, the amount of bank notes in circulation in Ireland was somewhat above seven millions and a half sterling, while in April, 1850, it is rather less than four millions and a half—a decrease of more than three millions of pounds sterling.

This diminution of money in the hands of the population has arisen, not from any monetary pressure, but solely from the exhausted and impoverished condition of the people, and the diminished number and amount of business transactions in consequence of there being comparatively little to buy and sell for four consecutive years.

The directors have, however, the satisfaction of being able to state, that during the past year the linen manufacture in the north of Ireland has been in a prosperous condition, a considerable business having been done in the export of that article at remunerating prices. The employment afforded by this manufacture in its various branches of spinning, weaving, and bleaching, and in the cultivation and preparation of flax, has been consequently considerable, and been productive of much benefit in those parts of Ulster to which it is still almost entirely confined. The cultivation of flax has, however, been exciting a good deal of attention, and there appears some prospect of its being, under the encouraging influence of some enterprising individuals, extended into other districts of Ireland. The flax crop of last year was considered to be satisfactory, both as to produce and quality. It is a matter of no small gratification to the directors to be enabled to state that great industry, care, and perseverance have been shown in laying down the spring crops of the present year in Ireland. The dry and favourable weather has forwarded this important operation, and it has been availed of with energy; and it is understood that a larger extent of land has been placed under tillage, both by proprietors and tenants, than has been the case for many years past.

The extensive cultivation of the potato may be considered liable to objection; but it must be remembered that this is the foundation of one branch of the provision trade, which was, in former years, of great importance to Ireland; and as the stock of pigs, which was so greatly reduced after the failure of the potato crop in 1846, has been again considerably increased during the last two years, it may be hoped that, if there be a good potato crop this year, that important branch of Irish trade may be again established on its former basis. Before proceeding to submit to the meeting the annual statement of the profits of the past year, the directors have to state that the branch bank, which was opened at Dundalk in February, 1846, not having fulfilled the expectations under which it was established, has been discontinued.

The directors have now to request attention to the following statement:—

The account submitted to the last general meeting in May, 1849, showed the amount of rest, or undivided profits, at March 31, 1849, to be £110,038 16 5 From which there has been deducted the amount of two half-yearly dividends—viz.: At Midsummer, 1849 ..... £21,600 0 At Christmas, 1849 ..... 21,600 0—43,200 0 0

Leaving a balance of ..... £66,838 16 5

To which there has since been added the amount of net profits for the year ending the 30th, being the last Saturday of March, 1850, after deducting the property tax, and all expenses, and providing for all bad and doubtful debts ..... £43,313 10 11

Making the rest, or amount of undivided profits, at March 30, 1850 ..... £110,152 7 4

The directors have only further to announce that it is their intention to pay as usual, in July next, a dividend of 4 per cent. for the year ending at Midsummer, 1850, at the rate of 8 per cent. per annum, on each share of 100s., on each share of 10s. of the capital stock of the bank; and they purpose also, as heretofore, to pay the property tax for the proprietors.

The CHAIRMAN then said, such was the report which the directors had to lay before them of their proceedings during the past very eventful and distressing year for all commercial transactions, but more especially for banking transactions, in a country so much impoverished by the visitations of Providence as Ireland had been for the last three or four years. That report did not show such an amount of profit as reports of former years showed; but that was not to be wondered at after the calamities of the last few years. It was to be hoped, however, that these calamities would soon cease; and that that country would soon assume the station in the world which it had hitherto maintained. (Hear, hear.) It would be improper in him to speak at length on the affairs of Ireland in the presence of so many gentlemen who were better acquainted with that country; but there was one matter which he could not avoid stating—there was one fact which he could not refrain from mentioning, because it put the character of Irish gentlemen in a position which was most creditable to their honour and humanity. There were numerous instances in which gentlemen in that country had deprived themselves of their own luxuries and comforts, rather than cease to employ, as they had always before done, the poor in their respective neighbourhoods. (Hear, hear.) Now, he thought no statement more honourable to the character of any set of men could be made than that which he then put forth. (Hear.) With respect to Ireland itself, he could pretend to know but little, when compared with the information possessed by many gentlemen in that room; but he could say, that the pressure which had come upon the landed property of that country, had brought many persons, who formerly were fully adequate to meet all their liabilities, into difficulties, and a comparative inability to pay their debts. The consequence of this was, that a great commercial company like the Provincial Bank of Ireland, was that it had incurred some losses, which could not, some years previously, have been considered possible. This, of course, also made the business of banking much more difficult than it otherwise might have been; for with every desire to give useful accommodation, and especially where it was felt to be most wanted, it was the duty of the directors to limit, rather than increase, that accommodation, with a proper view to the interests of the proprietors. But, he might say, they had not acted harshly or unkindly in any instance; and he had no doubt the establishment still enjoyed, in as great a degree as ever, the confidence and good wishes of the people of Ireland. (Hear.) They were now established for a quarter of a century, and had gone on progressively improving. The directors would wish to have been able to make a more favourable report, though he could not say that was by any means an unsatisfactory one (hear, hear) to present to the proprietors; and they wished that for two reasons—the first was, because it would be for the benefit of the proprietors and themselves; and the second was, that it would be an evidence of the improving condition of Ireland, and of her increasing prosperity. (Applause.) He then concluded by saying the directors were ready to answer any questions which might be put to them.

The Rev. Mr. LAWES said he waited to see if any gentleman rose to propose "that the report of the directors be adopted, printed, and circulated, amongst the proprietors;" but not seeing any one, he had risen to propose that resolution. He thought the report just read must be considered on the whole very satisfactory, considering the general distress which had prevailed in Ireland for so many years past. (Hear, hear.) He hoped the same would come when all persons would do all they could best for that country; and he thought at present they might look forward with a cheerful hope for brighter days for Ireland, and, of course a greater degree of prosperity for themselves. He would conclude by again moving the resolution.

Mr. WOLVERLY ATTWOOD seconded the motion, which was agreed to unanimously. The CHAIRMAN observed, that there was one proposition which he would now submit, and which he was sure they would all receive with great pleasure. They were aware how greatly the board was assisted by their able officers, and by the local directors in Ireland. He would, therefore, propose "that the thanks of the proprietors be given to the local directors in Ireland, and to Mr. Murray, Mr. Hewat, and to Mr. Rawlin's chief officers." (Applause.) In the presence of these gentlemen, he would not say more than that no establishment was ever better served with more anxious, more able, and more devoted officers, than the Provincial Bank of Ireland. If there were any fault, it was only in the excess of zeal on their part to promote the interests of the bank, which frequently gave the board some apprehension as to their own health; and for this reason they continually pressed upon these officers the necessity of getting further assistance, more particularly on Mr. Murray, who looked after the correspondence of all their branches, amounting to 38 in number. (Hear, hear.) It was a pleasure to have that gentleman's company that day, which was only caused by his coming over on the affairs of the bank; but they thought it was a relaxation for him to be absent from Dublin for a short time. He was sure that in moving such a resolution he expressed the feeling of all around that board table, and also when he stated that these gentlemen were all deserving of the best thanks of the proprietors, for the great attention they had always devoted to the interests of the establishment. (Applause.) The motion was passed unanimously.

Mr. THOMAS CAMPBELL proposed that the thanks of this meeting be now due, and are hereby given, to the court of directors, for their great attention to the interests of this bank; and to the chairman, for his conduct in the chair on this occasion. He could support this resolution from his own experience, for he believed they were all deeply indebted to the directors; and from the manner in which the report was received, although he was not present in time to hear it, he had no doubt, from what he had heard since, that such a resolution would be passed unanimously. (Hear, hear.) He was quite aware of the difficulties of banking, and that all over the world there were difficulties which must attend such operations. It was, therefore, a gratifying thing for him to find that the directors now felt themselves justified in proposing a continuation of the divi-

and they had hitherto given the proprietors, after which they would still retain a large amount of rest. (Hear, hear.)

Mr. SHIMON WARNER seconded the motion, which was passed unanimously.

The CHAIRMAN, in returning thanks for himself and colleagues, said they had now for 25 years carried on the business of this bank, and he was bound to say, that during the whole of that period he did not believe there had ever arisen one single topic on which there had been any dissension between the proprietors and directors. (Hear, hear.) The consequence of this was, that the business had been conducted in a satisfactory manner; neither had any proposition ever emanated from the board of directors, in which the proprietors themselves were not agreed. The directors had always given their best consideration and attention to the business of the bank, though any one might suppose they had many difficulties to encounter in carrying out their good intentions towards the establishment. He regretted the chair had not been filled by a much more worthy and honourable man; he meant their friend, Sir Moses Montefiore, who was compelled to be absent, but who always maintained the same deep interest in the success of the undertaking in which they were engaged; and he was sure it would have given that gentleman much pleasure if he had been there, to receive a vote of thanks from so many friends. The meeting then separated.

## CALEDONIAN RAILWAY COMPANY.—At an Adjourned

Meeting, numerously attended, of the Holders of the Preference Stock (£10 shares) of the Caledonian Railway Company, held pursuant to advertisement, at the London Tavern, on Tuesday, the 14th of May, 1850.

Capt. the Hon. EDWARD PLUNKETT, Chairman of the Company, in the chair.

The report of the committee appointed at the meeting on the 7th inst., on behalf of the Holders of Preference Stock, having been submitted, the following resolutions were passed unanimously:

1. That the report of the committee, now submitted to this meeting, be received and adopted, and that a copy of the same be sent to each shareholder.
2. That the cordial thanks of this meeting be given to the committee for their able services, and they be requested to continue those services until the proposed arrangement shall have been sanctioned by Parliament.
3. That the best thanks of the meeting be given to the chairman and directors for the cordial manner in which they have met the committee, and to the chairman, for his conduct in the chair to-day.

ARCHIBALD GIBSON, Assistant Secretary.

6, Duke-street, Westminster, May 14, 1850.

## IMPROVED WIRE ROPE.—The UNDERSIGNED, in

tendering their best thanks for the liberal support they have hitherto received, respectfully solicit attention to the vast IMPROVEMENTS which new machinery and attention have enabled them to effect in the MANUFACTURE OF ANDREW SMITH'S PATENT WIRE ROPE, more particularly his FLAT ROPE, which they can now produce of a description far superior to any previously offered to the public.

WILKINS & WEATHERLY.

Patent Wire Rope Works, 39, High-street, Wapping, London.

## ACCIDENTAL DEATH INSURANCE COMPANY.

(Completely Registered under the Act of 7 and 8, Victoria, c. 110).

7, BANK BUILDINGS, LOTHBURY, LONDON.

(ADJOINING THE GOVERNMENT ANNUITY OFFICE, OLD JEWRY).

DIRECTORS.

KENYON S. PARKER, Esq., Q.C., Lincoln's Inn, CHAIRMAN.

George I. Raymond Barker, Esq., Doughty-street, near Cirencester.

The Lord Thomas P. Clinton, Carlton Villas, Edgware-road.

Richard Fawkes, Esq., Laurel Lodge, Burnell.

The Lord A. Edwin Hill, M.P., Norwood-park, Southwell, Notts.

Thomas Knox Holmes, Esq., Finsbury-street, Westminster.

Hon. Richard E. Howard, Temple.

John Phillips Judd, Esq., 6, Mark-lane.

Capt. Lowther, M.P., 1st Life Guards.

Henry Blair Mayne, Esq., 3, Chester-street, Grosvenor-place.

James Mitchell, Esq., 38, Chancery-lane.

Charles Small Paris, Esq., Salvador House, Bishopsgate-street.

TRUSTEES.

George Wodehouse Currie, Esq., 29, Cornhill.

Montgomery Gladstone, Esq., Manchester.

Kenyon Stevens Parker, Q.C., Lincoln's Inn.

AUDITORS.

Thomas A. Mitchell, Esq., M.F., 9, New Broad-street.

Robert Tower, Esq., Salvador House, Bishopsgate-street.

Thomas M. Weggell, Esq., 57, Old Broad-street.

BANKERS—Messrs. Currie and Co., 29, Cornhill.

SOLICITORS—Messrs. Maltby and Robinson, 7, Bank-buildings.

CONSULTING ACTUARY—Edward Riley, Esq., F.R.S.A.

SECRETARY—William Young.

CLASS I.—£25. 6d. to insure £100.

CLASS II.—£25. 6d. to insure £50.

CLASS III.—£25. 6d. to insure £250.

The numerous casualties in mines, collieries, &c., which, by depriving the workman of his life, plunge his family into misery and want, have given rise to this company, whose rates are so low as to bring the benefits of insurance within the reach of the humblest classes. The directors invite the attention of the owners and lessees of mines and collieries, and others employing large bodies of men, to the principle of insuring them in the mass—in which case an abatement may be made from the above rates.

WILLIAM YOUNG, Secretary.

## New Patents.

## SPECIFICATIONS ENROLLED DURING THE PAST WEEK.

ENOCH CHAMBERS, Birmingham, smith: For improvements in the manufacture of wheels. Wheels made according to this invention are each first made up into two halves, each half consisting of one-half of the ring or felloe, one half the spokes, and one-half of the nave, all of wrought-iron, and the parts of a wheel are made in the following manner:—For each half of the nave a block or plate of iron is forged in a cylindrical exterior frame, with a flange or projection all round, and this flange or projection is to be drawn out by forging, so as to form projecting pieces at those parts in the circumference where the spokes are to be welded on. In the wheel shown in the drawings which accompany the specification there are eight spokes, four on each half-wheel, and in all cases this construction of wheel requires to have an even number of spokes, half being affixed or welded to one-half of the nave, and the other half of the spokes being fixed to the other half of the nave, and the spokes being placed in such relative positions that those of the one-half shall come into the spaces between those of the other half. The projection or flange being thus drawn out or forged at intervals on each half of the nave of an intended wheel, so as to produce proper projections for the purpose of receiving the spokes; the spokes are to be welded on each spoke having a portion of the ring or felloe of the wheel forged thereon, the alternate portions of the felloe or ring being on the two half navies respectively; so that when the two are brought together, and the inner surfaces of the two half navies are brought together, they will form the wheel. The two half navies are to be brought to a welding heat, and being placed one on the other, in the position above described, are to be welded together by a suitable hammer or press. The patentee proposes to use a steam hammer for this purpose; and the parts of the felloe or ring of the wheel where they come together are also to be welded, and the tire is to be shrunk on, and made available to receive the axle-tree, as shown, and as is well understood. Instead of welding the spokes and parts of the felloe to the half navies, before welding the half navies together, the spokes and parts of the felloe may be welded on afterwards, but the former method is preferred. In the preceding description special reference is made to railway wheels, but the same method of construction, it is stated, is equally applicable to wheels for common-road carriages and waggon.

Claims.—1. The manufacture of wheels by first making the nave in two parts (divided vertically) each having half the number of spokes, with a portion of the felloe attached to each spoke, and then welding together the said two half navies, after which the tire is shrunk on as usual.—2. The making of wrought iron navies with two flanges, each to receive, and have welded thereto, one half of the spokes of which a wheel is to be composed.

FREDERICK OCTAVIUS PALMER, gentleman, Great Sutton-street, Middlesex: For certain improvements in the manufacture of candles, and also in the machinery for the manufacture of such matters. The patentee describes and claims—1. Making helical wicks for candles, consisting of a number of strands bound together by cross-gyming, or otherwise, with one of the strands of harder and stiffer substance than the others, in order to support and maintain them in position.—2. Making coiled wicks of cotton cord twisted hard and firm, and grouped or bound together.—3. Fluting candle wicks on a wire, which is afterwards withdrawn, in order to leave a space for the expansion of the threads, and facilitate capillary action.—4. Metallizing one of the strands of which the candle wick is composed, by immersing it in bismuth.—5. Cross gyming the wicks by passing them once through an ordinary gyming machine, and then a second time in the reverse direction, or through this machine, which has two flyers and bobbins added, that rotate in opposite directions round the tube through which the wick passes, and cross gym it on both sides at the same time.

WILLIAM EDWARD NEWTON, Chancery-lane, C.E.: For improvements in machinery for dressing, shaping, cutting, and drilling, or boring rocks or stone; part of which improvements are, with certain modifications, applicable to machinery or apparatus for driving piles.

Claims.—1. The employment of cutters formed of circular metal plates mounted either singly or sets on a shaft or spindle, such cutters being made to pass over the surface of the substance to be operated on with a rolling motion, so that it will cut away or reduce to the required form any projections thereon. Also the use of cutters, supported on a rotary stock, which act upon the surface by impact, or by striking against it.—2. A combination and arrangement of friction cylinders or drums with a treadle and a barrel, which raise the boring tool by winding the cord. (Two of the cylinders are keyed on the driving shaft, and the other two on the axle of the barrel, which may be moved up by the treadle so as to bring its cylinders into contact with the cord and receive rotary motion.)—3. Peculiar arrangements, or any modification thereof, for winding up the cord, as in the preceding case, by means of a drum with a rim and wedge-shaped projection, which, at a certain point, cause the cord to ride off, and allow the boring tool to fall.—4. Any modifications of the arrangements embraced under the second and third claims for raising the monkey, or weights in pile-driving machinery.

## DESIGNS FOR ARTICLES OF UTILITY REGISTERED.

Dent, Alford, and Co., Wood-street, Cheapside, the Osborne cravat.

J. Lant, Birmingham, fastening for trousers-straps.

J. Masters, Leicester, cake-tins or exercising belt.

Fenberton and Son, Birmingham, easement fastener.—*Mechanics' Magazine.*

## THE LARGEST ROPE EVER MADE IN SCOTLAND.—Messrs. Peter Gavin and

Son, rope and sail-cloth works, Bath-street, Leith, have just completed the largest rope ever made in Scotland. The rope measures 200 fms., or 1200 ft.; it is 7 inches broad, and weighs upwards of 3 tons, and is for the Maitell Coal Company Victoria Pit, 175 fathoms deep, near Harleith.

A "MAY" SNOWBALL.—On Sunday last, the mail from the north was delayed nearly a full hour, in consequence of the obstruction which the train met with from snow. The carriages, on their arrival at Preston, were partially whited on their tops with snow flakes; and one of the porters at the station was enabled to collect a snowball—a curious phenomenon in May.—*L'pool Stand*

## BY HER MAJESTY'S ROYAL LETTERS PATENT.

## IMPORTANT TO RAILWAY COMPANIES, CARRIERS, AND OTHERS.

## ROWLAND BROTHERHOOD'S TILT, for COVERING

RAILWAY TRUCKS, WAGGONS, &c.  
This invention allows of trucks or waggons being covered or uncovered with surprising ease and facility, so that one porter can uncover two trucks in the space of a minute, and two can re-cover both in the same time. It allows of a small portion, or the whole area of the truck, being uncovered, and affords great facility for loading and unloading, and protecting the goods in these operations, as well as in the course of transit. It can be secured by locks and keys, thus rendering merchandise secure from plunder. It is cheap in its construction, can be applied to railway trucks and waggons generally, and is easily attached or detached. It runs smoothly through the air at high speeds, and against head winds.

This Tilt has been in use on different parts of the broad gauge during the winter, and has been found to work remarkably well in the severest weather. Experienced and practical persons, who have the management of large goods' stations, and have seen these tilts in working, and who know the great wear and tear of cloths, tarpauling, &c., and the inconvenience of existing modes for goods' covering, are of opinion that these Tilts will be of great utility in railway services. The patentee is himself prepared either to construct, or, on moderate terms, to license parties to construct his patent Tilts. Applications to be addressed to R. Brotherhood, Railway-Works, Clippenham, Wills.



No. 1.  
This shows the side elevation of a wagon, with the tilt closed and fastened down.



No. 2.  
This shows the tilt as applied to a box, wagon, or long-sided truck, with longitudinal bearers.



No. 3.  
This is an end elevation of the same on a larger scale, showing the pin and fan which supports and carries over the longitudinal bearers to which the cloth is attached, and which when open lies compactly folded along the side of the truck, leaving the whole area of the truck open for receiving or discharging its contents by crane or otherwise.



No. 4.  
This is an end elevation of the same, showing the tilt partially closed, so that the whole or any portion of the truck can be open at pleasure, affording means of protection for part of the merchandise, whilst the other is being loaded or unloaded, or the truck may be used entirely uncovered, without the tilt in the least interfering.



No. 5.  
This is an end elevation of the same, showing the tilt closed, and the truck being used as a box, or low-sided truck, with curved longitudinal bearers.

INDURATED AND IMPERVIOUS STONE, CHALK, &c.  
—AGENTS, with capital, are WANTED in ALL TOWNS to SUPPLY (under British and Foreign Patents) the great demand for HUTCHINSON'S MATERIALS—hard as granite, impervious to moisture, vermin, &c.: the cheapest and most durable for all buildings, hydraulic, paving, monumental and decorative work.—The profits are large. Apply to HUTCHINSON & CO., 140, Strand, London; or Tunbridge Wells, Kent, and Caen, Normandy, stating name, address, and capital at command.

N.B.—Houses cured of damp. The produce of soft stone quarries, chalk, plaster of Paris, wood, pasteboard, and all absorbent materials indurated to resist frost, vermin, &c. LICENCES GRANTED.

## PATENT IMPROVEMENTS IN CHRONOMETERS,

WATCHES AND CLOCKS.

E. J. DENT, 62, Strand; 33, Cockspur-street; 34, Royal Exchange (clock tower area). Watch and Clock Maker, BY APPOINTMENT, to the Queen and his Royal Highness Prince Albert, begs to acquaint the public, that the manufacture of his chronometers, watches, and clocks, is secured by three separate patents, respectively granted in 1836, 1840, 1842. Silver lever watches, jewelled in four holes, 6 g. each; in gold cases, from £5 to £10 extra. Gold horizontal watches, with gold dials, from 8 g. to 12 g. each.

DENT'S PATENT DIPLÉSCOPE, or Meridian Instrument, is now ready for delivery.—Pamphlet containing a description and directions for its use is, each, sent to customers gratis.

## THE PATENT OFFICE AND DESIGNS REGISTRY.

No. 10, STRAND, LONDON.

INVENTORS will receive (gratis), on application, the OFFICIAL CIRCULAR OF INFORMATION, detailing the eligible course for PROTECTION OF INVENTIONS and DESIGNS, with Reduced Scale of Fees.

Messrs. F. W. CAMPIN and CO. offer their services, and the benefit of many years experience, in SECURING PATENTS and REGISTRATIONS OF DESIGNS, with due regard to validity, economy, and dispatch—assisted by scientific men of repute.

Also, in MECHANICAL and ENGINEERING DRAWINGS, whether connected with Patents, Railways, or otherwise, by a staff of first-rate draftsmen. Application personally, or by letter, to F. W. Campin and Co., No. 210, Strand (corner of Essex-street).

## BY HER MAJESTY'S ROYAL LETTERS PATENT.

## MASTERS &amp; CO., ORIGINAL INVENTORS and SOLE

PATENTERS of the following SCIENTIFIC and USEFUL INVENTIONS, beg to call the attention of the Nobility and Gentry to their latest discovery in the preparation of SODA WATER, &c., by their

## PATENT SODA-WATER and AERATING APPARATUS.

By the aid of which Soda Water, and all aerated waters, can be made and fully charged with carbonic acid gas in a few minutes, and the flattest Beer or Wine can be made as brilliantly sparkling as Champagne in an equally short time, and the expense more nothing.—Price of machine, 30s. and upwards, which needs only to be appreciated. Adapted for shippers to every climate. Also,

## MASTERS' PATENT ICE SAFE,

For preserving Provisions Cool in the hottest weather in summer.

## MASTERS' PATENT FREEZING MACHINE.

For making Dessert Ices, Freezing Spring Water, and Cooling Wine at the same time with or without ice. The largest size is suitable for confectioners, and will make from 50 to 100 quarts of Dessert Ice in a few minutes.

## MASTERS' PATENT SHERRY COBBLER FREEZING and COOLING JUG.

For producing Pure Ice from Spring Water, on your own table, in five minutes, without the aid of ice, by his Freezing Mixture, which will produce ice in one minute in the hottest climate.

## Every description of APPARATUS for PRODUCING ICE ARTIFICIALLY.

Also, by Royal Letters Patent.

## MASTERS &amp; CO.'S PATENT ROTARY BUFF KNIFE-CLEANING MACHINE.

Which will clean and polish, equal to new, 12 knives in one minute, without noise or dust. Descriptive particulars and engravings, with upwards of 700 testimonials, forwarded on application to MASTERS & CO., 333, Oxford-street, Regent-circus, and his Depot at joining the Polytechnic; also, at 7, Mansion-house-place, City.

## THE TEETH—DENTAL SURGERY.—Mr. GAVIN, SUR-

GEON DENTIST, 33, SOUTHAMPTON-STREET, STRAND, begs to call the attention of his patients and the public generally to his recent important improvements in ARTIFICIAL TEETH, and to his perfect and painless system of fixing them in the mouth, by which successful and scientific principle the removal of roots, or any painful operation whatever, is entirely obviated. Old pieces of teeth, or misfits remodelled and adapted to the mouth with security and comfort. Mr. Gavin begs also to state, that, notwithstanding his late invaluable improvements in dental science, he still insures the same moderate charges and successful treatment which have procured him such extensive patronage.—A single tooth ..... from 20 s. 6 d.